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POINT DE LA OLLA.

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# The GRAND CANYON of ARIZONA

BEING A BOOK OF WORDS FROM MANY  
PENS, ABOUT THE GRAND CANYON OF  
THE COLORADO RIVER IN ARIZONA.



Published by the  
Passenger Department of the Santa Fe.

1902.

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GENERAL VIEW FROM BRIGHT ANGEL.

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# THE TITAN OF CHASMS.

BY C. A. HIGGINS.



C. A. HIGGINS.

The following description of the Grand Canyon region is condensed from an article written ten years ago by Mr. C. A. Higgins, and published in pamphlet form by the passenger department of the Santa Fe.

Mr. Higgins (who, at the time of his sudden death in 1900, occupied the position of Assistant General Passenger Agent of the A. T. & S. F. Ry. in special charge of advertising) knew the Grand Canyon more intimately than most men who have written of it. He had descended all the trails and had camped for weeks in the inner gorge and along the rim. He had visited it with artists, lecturers, explorers and scientists. He had read everything of value written about it. This research, acquaintance and experience took root in a well-trained mind, keen for facts

and tenacious of impressions. He was a most lovable man, who appreciated books, music, pictures, poetry and nature. Enjoying such things, he loved the Grand Canyon—there is no other word so well expresses the relation. And being a lover, he wrote from the heart.

Mr. Higgins also loved the great Southwest, big with historic, scenic and human interest. His grasp of the ancient and modern in Indian life (facilitated by membership in one of the most exclusive Moki secret societies), would ultimately have made him prominent among ethnologists. His painstaking, his direct sympathy, his helpfulness to men of science, were unexampled. He caught the deeper significance of symbol and design; their translation revealed to him the meaning of the past and the purpose of the present among these children of the desert. His researches among the dwellers in the skylight cities of Arizona were as fruitful in practical results as his kindred study of the Grand Canyon.

## ITS HISTORY.

**T**HE Colorado is one of the great rivers of North America. Formed in southern Utah by the confluence of the Green and Grand, it intersects the northwestern corner of Arizona, and, becoming the eastern boundary of Nevada and California, flows southward until it reaches tidewater in the Gulf of California, Mexico. It drains a territory of 300,000 square miles, and, traced back to the rise of its principal source, is 2,000 miles long. At two points, Needles and Yuma on the California boundary, it is crossed by a railroad. Elsewhere its course lies far from Caucasian settlements and far from the routes of common travel, in the heart of a vast region fenced on the one hand by arid plains or deep forests and on the other by formidable mountains.

The early Spanish explorers first reported it to the civilized world in 1540, two separate expeditions becoming acquainted with the river for a comparatively short distance above its mouth, and another, journeying from the Moki Pueblos northwestward across the desert, obtaining the first view of the Big Canyon, failing in every effort to descend the canyon wall, and spying the river only from afar.

Again, in 1776, a Spanish priest traveling southward through Utah struck off from the Virgin River to the southeast and found a practicable crossing at a point that still bears the name "Vado de los Padres."



For more than eighty years thereafter the Big Canyon remained unvisited, except by the Indian, the Mormon herdsman and the trapper, although the Sitgreaves expedition of 1851, journeying westward, struck the river about one hundred and fifty miles above Yuma, and Lieutenant Whipple in 1854 made a survey for a practicable railroad route along the thirty-fifth parallel, where the Santa Fe Pacific has since been constructed.

The establishment of military posts in New Mexico and Utah having made desirable the use of a water-way for the cheap transportation of supplies, in 1857 the War Department dispatched an expedition in charge of Lieutenant Ives to explore the Colorado as far from its mouth as navigation should be found practicable. Ives ascended the river in a specially constructed steamboat to the head of Black Canyon, a few miles below the confluence of the Virgin River in Nevada, where further navigation became impossible; then, returning to the Needles, he set off across the country toward the northeast. He reached the Big Canyon at Diamond Creek and at Cataract Creek in the spring of 1858, and from the latter point made a wide southward detour around the San Francisco peaks, thence northeastward to the Moki Pueblos, thence eastward to Fort Defiance and so back to civilization.

That is the history of the explorations of the Colorado up to forty years ago. Its exact course was unknown for many hundred miles, even its origin being a matter of conjecture, it being difficult to approach within a distance of two or three miles from the channel, while descent to the river's edge could be hazarded only at wide intervals, inasmuch as it lay in an appalling fissure at the foot of seemingly impassable cliff terraces that led down from the bordering plateau; and to attempt its navigation was to court death. It was known in a general way that the entire channel between Nevada and Utah was of the same titanic character, reaching its culmination nearly midway in its course through Arizona.

In 1869 Maj. J. W. Powell undertook the exploration of the river with nine men and four boats, starting from Green River City, on the Green River, in Utah. The project met with the most urgent remonstrance from those who were best acquainted with the region, including the Indians, who maintained that boats could not possibly live in any one of a score of rapids and falls known to them, to say nothing of the vast unknown stretches in which at any moment a Niagara might be disclosed. It was also currently believed that for hundreds of miles the river disappeared wholly beneath the surface of the earth. Powell launched his flotilla on May 24, and on August 30 landed at the mouth of the Virgin River, more than one thousand miles by the river channel from the place of starting, minus two boats and four men. One of the men had left the expedition by way of an Indian reservation agency before reaching Arizona, and three, after holding out against unprecedented terrors for many weeks, had finally become daunted, choosing to encounter the perils of an unknown desert rather than to brave any longer the frightful menaces of that Stygian torrent. These three, unfortunately making their appearance on the plateau at a time when a recent depredation was colorably chargeable upon them, were killed by Indians, their story of having come thus far down the river in boats being wholly discredited by their captors.

Powell's journal of the trip is a fascinating tale, written in a compact and modest style, which, in spite of its reticence, tells an epic story of purest heroism. It definitely established the scene of his exploration as the most wonderful geological and spectacular phenomenon known to mankind, and justified the name which had been bestowed upon

it—THE GRAND CANYON—sublimest of gorges; Titan of chasms. Many scientists have since visited it, and, in the aggregate, a large number of unprofessional lovers of nature; but until a few years ago no adequate facilities were provided for the general sight-seer, and the world's most stupendous panorama was known principally through report, by reason of the discomforts and difficulties of the trip, which deterred all except the most indefatigable enthusiasts. Even its geographical location is the subject of widespread misapprehension.

Its title has been pirated for application to relatively insignificant canyons in distant parts of the country, and thousands of tourists have been led to believe that they saw the Grand Canyon when, in fact, they looked upon a totally different scene, between which and the real Grand Canyon there is no more comparison "than there is between the Alleghanies or Trosachs and the Himalayas."

There is but one Grand Canyon. Nowhere in the world has its like been found.

#### AS SEEN FROM THE RIM.

Stolid indeed is he who can front the awful scene and view its unearthly splendor of color and form without quaking knee or tremulous breath. An inferno, swathed in soft celestial fires; a whole chaotic under-world, just emptied of primeval floods and waiting for a new creative word; eluding all sense of perspective or dimension, outstretching the faculty of measurement, overlapping the confines of definite apprehension; a boding, terrible thing, unflinchingly real, yet spectral as a dream. The beholder is at first



*Photo, E. J. Hall.*

BRIGHT ANGEL HOTEL, FROM SOUTH.



**A VIEW FROM THE NORTH WALL.**

unimpressed by any detail; he is overwhelmed by the *ensemble* of a stupendous panorama, a thousand square miles in extent, that lies wholly beneath the eye, as if he stood upon a mountain peak instead of the level brink of a fearful chasm in the plateau whose opposite shore is thirteen miles away. A labyrinth of huge architectural forms, endlessly varied in design, fretted with ornamental devices, festooned with lace-like webs formed of talus from the upper cliffs and painted with every color known to the palette in pure transparent tones of marvelous delicacy. Never was picture more harmonious, never flower more exquisitely beautiful. It flashes instant communication of all that architecture and painting and music for a thousand years have gropingly striven to express. It is the soul of Michael Angelo and of Beethoven.

A canyon, truly, but not after the accepted type. An intricate system of canyons, rather, each subordinate to the river channel in the midst, which in its turn is subordinate to the whole effect. That river channel, the profoundest depth, and actually more than 6,000 feet below the point of view, is in seeming a rather insignificant trench, attracting the eye more by reason of its somber tone and mysterious suggestion than by any appreciable characteristic of a chasm. It is perhaps five miles distant in a straight line, and its uppermost rims are nearly 4,000 feet beneath the observer, whose measuring capacity is entirely inadequate to the demand made by such magnitudes. One cannot believe the distance to be more than a mile as the crow flies, before descending the wall or attempting some other form of actual measurement.

Mere brain knowledge counts for little against the illusion under which the organ of vision is here doomed to labor. Yonder cliff, darkening from white to gray, yellow and brown as your glance descends, is taller than the Washington Monument. The Auditorium in Chicago would not cover one-half its perpendicular span. Yet it does not greatly impress you. You idly toss a pebble toward it, and are surprised to note how far the missile falls short. By and by you will learn that it is a good half mile distant, and when you go down the trail you will gain an abiding sense of its real proportions. Yet, relatively, it is an unimportant detail of the scene. Were Vulcan to cast it bodily into the chasm directly beneath your feet, it would pass for a bowlder, if indeed it were discoverable to the unaided eye.

Yet the immediate chasm itself is only the first step of a long terrace that leads down to the innermost gorge and the river. Roll a heavy stone to the rim and let it go. It falls sheer the height of a church or an Eiffel Tower, according to the point selected for such pastime, and explodes like a bomb on a projecting ledge. If, happily, any considerable fragments remain, they bound onward like elastic balls, leaping in wild parabola from point to point, snapping trees like straws; bursting, crashing, thundering down the declivities until they make a last plunge over the brink of a void; and then there comes languidly up the cliff sides a faint, distant roar, and your bowlder that had withstood the buffets of centuries lies scattered as wide as Wycliffe's ashes, although the final fragment has lodged only a little way, so to speak, below the rim. Such performances are frequently given in these amphitheaters without human aid, by the mere undermining of the rain, or perhaps it is here that Sisyphus rehearses his unending task. Often in the silence of night some tremendous fragment has been heard crashing from terrace to terrace with shocks like thunder peal.

The spectacle is so symmetrical, and so completely excludes the outside world and its accustomed standards, it is with difficulty one can acquire any notion of its immensity.

Were it half as deep, half as broad, it would be no less bewildering, so utterly does it baffle human grasp.

### THE TRIP TO THE RIVER.

Only by descending into the canyon may one arrive at anything like comprehension of its proportions, and the descent cannot be too urgently commended to every visitor who is sufficiently robust to bear a reasonable amount of fatigue. There are four paths down the southern wall of the canyon in the granite gorge district—Mystic Spring, Bright Angel, Berry's and Hance's trails. The following account of a descent of the old Hance trail will serve to indicate the nature of such an experience to-day, except that the trip may now be safely made with greater comfort.

For the first two miles it is a sort of Jacob's ladder, zigzagging at an unrelenting pitch. At the end of two miles a comparatively gentle slope is reached, known as the blue limestone level, some 2,500 feet below the rim; that is to say—for such figures have to be impressed objectively upon the mind—five times the height of St. Peter's, the Pyramid of Cheops or the Strasburg Cathedral; eight times the height of the Bartholdi Statue of Liberty; eleven times the height of Bunker Hill Monument.



ASCENDING BRIGHT ANGEL TRAIL.

Looking back from this level the huge picturesque towers that border the rim shrink to pigmies and seem to crown a perpendicular wall, unattainably far in the sky. Yet less than one-half the descent has been made.

Overshadowed by sandstone of chocolate hue the way grows gloomy and foreboding, and the gorge narrows. The traveler stops a moment beneath a slanting cliff 500 feet high, where there is an Indian grave and pottery scattered about. A gigantic niche has been worn in the face of this cavernous cliff, which, in recognition of its fancied Egyptian character, was named the Temple of Sett by the painter, Thomas Moran.

A little beyond this temple it becomes necessary to abandon the animals. The river is still a mile and a half distant. The way narrows now to a mere notch, where two wagons could barely pass, and the granite begins to tower gloomily overhead, for we have dropped below the sandstone and have entered the archæan—a frowning black rock, streaked, veined and swirled with vivid red and white, smoothed and polished by the rivulet and beautiful as a mosaic. Obstacles are encountered in the form of steep interposing crags, past which the brook has found a way, but over which the pedestrian must clamber. After these lesser difficulties come sheer descents, which at present are passed by the aid of ropes.

The last considerable drop is a forty-foot bit by the side of a pretty cascade, where there are just enough irregularities in the wall to give toe-hold. The narrowed cleft becomes exceedingly wayward in its course, turning abruptly to right and left, and working down into twilight depths. It is very still. At every turn one looks to see the embouchure upon the river, anticipating the sudden shock of the unintercepted roar of waters. When at last this is reached, over a final downward clamber, the traveler stands upon a sandy rift confronted by nearly vertical walls many hundred feet high, at whose base a black torrent pitches in a giddyding onward slide that gives him momentarily the sensation of slipping into an abyss.

With so little labor may one come to the Colorado River in the heart of its most tremendous channel, and gaze upon a sight that heretofore has had fewer witnesses than have the wilds of Africa. Dwarfed by such prodigious mountain shores, which rise immediately from the water at an angle that would deny footing to a mountain sheep, it is not easy to estimate confidently the width and volume of the river. Choked by the stubborn granite at this point, its width is probably between 250 and 300 feet, its velocity fifteen miles an hour, and its volume and turmoil equal to the Whirlpool Rapids of Niagara. Its rise in time of heavy rain is rapid and appalling, for the walls shed almost instantly all the water that falls upon them. Drift is lodged in the crevices thirty feet overhead.

For only a few hundred yards is the tortuous stream visible, but its effect upon the senses is perhaps the greater for that reason. Issuing as from a mountain side, it slides with oily smoothness for a space and suddenly breaks into violent waves that comb back against the current and shoot unexpectedly here and there, while the volume sways tide-like from side to side, and long curling breakers form and hold their outline lengthwise of the shore, despite the seemingly irresistible velocity of the water. The river is laden with drift (huge tree trunks), which it tosses like chips in its terrible play.

Standing upon that shore one can barely credit Powell's achievement, in spite of its absolute authenticity. Never was a more magnificent self-reliance displayed than by the man who not only undertook the passage of Colorado River but won his way. And after

viewing a fraction of the scene at close range, one cannot hold it to the discredit of three of his companions that they abandoned the undertaking not far below this point. The fact that those who persisted got through alive is hardly more astonishing than that any should have had the hardihood to persist. For it could not have been alone the privation, the infinite toil, the unending suspense in constant menace of death that assaulted their courage; these they had looked for; it was rather the unlifted gloom of those tartarean depths, the unspeakable horrors of an endless valley of the shadow of death, in which every step was irrevocable.

Returning to the spot where the animals were abandoned, camp is made for the night. Next morning the way is retraced. Not the most fervid pictures of a poet's fancy could transcend the glories then revealed in the depths of the canyon; inky shadows, pale gildings of lofty spires, golden splendors of sun beating full on façades of red and yellow, obscurations of distant peaks by veils of transient shower, glimpses of white towers half drowned in purple haze, suffusions of rosy light blended in reflection from a hundred tinted walls. Caught up to exalted emotional heights the beholder becomes unmindful of fatigue. He mounts on wings. He drives the chariot of the sun.

### THE LAST GLIMPSE.

Having returned to the plateau, it will be found that the descent into the canyon has bestowed a sense of intimacy that almost amounts to a mental grasp of the scene. The terrific deeps that part the walls of hundreds of castles and turrets of mountainous bulk



THE NORTH WALL FROM GRAND SCENIC DIVIDE.

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may be approximately located in barely discernible pen-strokes of detail, and will be apprehended mainly through the memory of upward looks from the bottom, while towers and obstructions and yawning fissures that were deemed events of the trail will be wholly indistinguishable, although they are known to lie somewhere flat beneath the eye. The comparative insignificance of what are termed grand sights in other parts of the world is now clearly revealed. Twenty Yosemitees might lie unperceived anywhere below. Niagara, that Mecca of marvel seekers, would not here possess the dignity of a trout stream. Your companion, standing at a short distance on the verge, is an insect to the eye.

Still, such particulars cannot long hold the attention, for the panorama is the real overmastering charm. It is never twice the same. Although you think you have spelt out every temple and peak and escarpment, as the angle of sunlight changes there begins a ghostly advance of colossal forms from the farther side, and what you had taken to be the ultimate wall is seen to be made up of still other isolated sculptures, revealed now for the first time by silhouetting shadows. The scene incessantly changes, flushing and fading, advancing into crystalline clearness, retiring into slumberous haze.

Should it chance to have rained heavily in the night, next morning the canyon is completely filled with fog. As the sun mounts, the curtain of mist suddenly breaks into cloud fleeces, and while you gaze these fleeces rise and dissipate, leaving the canyon bare. At once around the bases of the lowest cliffs white puffs begin to appear, creating a scene of unparalleled beauty as their dazzling cumuli swell and rise and their number multiplies, until once more they overflow the rim, and it is as if you stood on some land's end looking down upon a formless void. Then quickly comes the complete dissipation, and again the marshaling in the depths, the upward advance, the total suffusion and the speedy vanishing, repeated over and over until the warm walls have expelled their saturation.

Long may the visitor loiter upon the verge, powerless to shake loose from the charm, tirelessly intent upon the silent transformations until the sun is low in the west. Then the canyon sinks into mysterious purple shadow, the far Shinumo Altar is tipped with a golden ray, and against a leaden horizon the long line of the Echo Cliffs reflects a soft brilliance of indescribable beauty, a light that, elsewhere, surely never was on sea or land. Then darkness falls, and should there be a moon, the scene in part revives in silver light, a thousand spectral forms projected from inscrutable gloom; dreams of mountains, as in their sleep they brood on things eternal.



EARLY MORNING AT GRAND VIEW.



# THE SCIENTIFIC EXPLORER.

BY J. W. POWELL.



J. W. POWELL.

The United States government was peculiarly fortunate in the designation of the man who, before any of his fellows, was to undertake the exploration of the Grand Canyon of Arizona.

Powell was the pioneer explorer. He combined the intrepidity of the soldier with the enthusiasm of the scientist. It was a journey down the great unknown. His daring startled his countrymen. Best of all, he opened to the world of science new fields for research. Later, he commanded several purely geologic expeditions, and his invaluable contributions have become classic.

Both by reason of his pioneer passage of the Colorado and his contributions to science, Major Powell's name is indissolubly linked with that of the Grand Canyon.

Major Powell is now the Director of the Bureau of American Ethnology, Smithsonian Institution, Washington, D. C., and the following article was especially prepared by him for this publication:

## THE FIRST EXPLORERS.

**T**HE Pueblo of Zuñi stands alone. The early Spanish explorers who penetrated from Mexico northward into what is now the territory of the United States dignified a group of villages in the region of Zuñi as the "Seven Cities of Cibola." There were wonders enough in the new world to kindle the imagination into a blaze that illumined everything with the light of exaggeration, and the little rude stone villages of the savages were published to the world as great cities.

Early in 1540 an expedition set forth from Compostela, a town about 6° west of what is now the City of Mexico, to explore the regions far to the north in search of cities and gold. Alvar Nuñez, a priest, had wandered for years on the most romantic journey ever made in America. He went from Florida northward, then westward, and ultimately southward until he reached Mexico. In the main he traveled in the capacity of a priest-doctor, and his advent was heralded from tribe to tribe, for his presence was usually made welcome and sometimes eagerly sought.

Alvar Nuñez told the Spaniards in Mexico of the peoples he had encountered and the cities he had seen, and, though his account was not exaggerated, yet the fervid imagination of the Spaniards and their prodigious greed for gold soon caused them to organize an expedition to this country. Coronado was its leader, a commander of great capacity, who wandered far to the north and then to the east as far as the mouth of the Republican River in eastern Kansas, then turning westward he at last recrossed what is now called the Rio Grande del Norte and discovered the Seven Cities of Cibola. Of these cities only Zuñi remains. The fact that it is one of those cities was proved by Cushing. When Alvar Nuñez approached Zuñi one of his companions was killed; this was Steven—a Barbary negro; and Cushing found these Zuñi Indians still recounting the story of the death of Steven as one of the most important episodes in their history. Through the genius of Cushing the fame of Zuñi has spread throughout the world, for what he committed to writing future generations will read with delight.

In the villages round about, the Spaniards were told of a mighty river and giant people

living in the west. Garcia Lopez was instructed by Coronado to take a party of men with Indian guides to verify these reports. His authority for exploration was extended to eighty days. He started August the 25th and within the term of his authority he succeeded in reaching the Grand Canyon of the Colorado River. Thus what is now popularly known as the Grand Canyon of Arizona was discovered by Europeans.

### THE IVES AND WHEELER EXPEDITIONS.

In the fall of 1857 Lieut. Ives, of the engineer corps of the army, ascended the Colorado River on a trip of exploration with a little steamer called the Explorer; he went as far as the mouth of the Rio Virgin. Falling back down river a few miles, Lieut. Ives met a pack train which had followed him up the bank of the stream. Here he disembarked, and on the 24th of March started with a land party to explore the eastern bank of the river; making a long detour he ascended the plateau through which the Grand Canyon is cut, and in an adventurous journey he obtained views of the canyon along its lower course. On this trip J. S. Newberry was the geologist, and to him we are indebted for the first geological explanation of the canyon and the description of the high plateau through which it is formed. Dr. Newberry was not only an able geologist, but he was also a graphic writer, and his description of the canyon as far as it was seen by him is a classic in geology.

In 1869 Lieut. Wheeler was sent out by the chief engineer of the army to explore the Grand Canyon from below. In the spring he succeeded in reaching the mouth of Diamond Creek, which had previously been seen by Dr. Newberry in 1858. Mr. Gilbert was the geologist of this expedition, and his studies of the canyon region during this and subsequent years have added greatly to our knowledge of this land of wonders.

### MAJOR POWELL'S SEVERAL TRIPS.

In this same year I essayed to explore the Grand Canyon of the Colorado, together with the upper canyons of that stream and the great canyons of the lower portion of Green River. For this purpose I employed four rowboats and made the descent from what is now Green River station through the whole course of canyons to the mouth of the Rio Virgin, a distance of more than a thousand miles.

In the spring of 1870 I again started with three boats and descended the river to the Crossing of the Fathers, where I met a pack train and went out with a party of men to explore ways down into the Grand Canyon from the north, and devoted the summer, fall, winter and following spring to this undertaking.

In the summer of 1871 I returned to the rowboats and descended through Marble Canyon to the Grand Canyon of Arizona, and then through the greater part of the Grand Canyon itself. Subsequent years were then given to exploration of the country adjacent to the Grand Canyon. On these trips Mr. Gilbert, the geologist who had been with Lieut. Wheeler, and Capt. C. F. Dutton, were my geological companions. On the second boat trip, and during all the subsequent years of exploration in this region, Prof. A. H. Thompson was my geographical companion, assisted by a number of topographical engineers.

In 1882 Mr. C. D. Walcott, as my assistant in the United States Geological Survey, went with me into the depths of the Grand Canyon. We descended from the summit of the Kaibab Plateau on the north by a trail which we built down a side canyon in a

direction toward the mouth of the Little Colorado River. The descent was made in the fall, and a small party of men was left with Mr. Walcott in this region of stupendous depths to make a study of the geology of an important region of labyrinthian gorges. Here, with his party, he was shut up for the winter, for it was known when we left him that snows on the summit of the plateau would prevent his return to the upper region before the sun should melt them the next spring. Mr. Walcott is now the Director of the United States Geological Survey.

After this year I made no substantial additions to my geologic and scenic knowledge of the Grand Canyon, though I afterward studied the archæology to the south and east throughout a wide region of ruined pueblos and cliff dwellings.

Since my first trip in boats many others have essayed to follow me, and year by year such expeditions have met with disaster; some hardy adventurers are buried on the banks of the Green and the graves of others are scattered at intervals along the course of the Colorado.

In 1889 the brave F. M. Brown lost his life. But finally a party of railroad engineers, led by R. B. Stanton, started at the head of Marble Canyon and made their way down the river as they extended a survey for a railroad along its course.

Other adventurous travelers have visited portions of the Grand Canyon region, and Mr. G. Wharton James has extended his travels widely over the region in the interest of popular science and the new literature created in the last decades of the nineteenth century. And now I once more return to a reminiscent account of the Grand Canyon, for old men love to talk of the past.

### THE PLATEAU REGION.

The Grand Canyon of Arizona and the Marble Canyon constitute one great gorge carved by a mighty river through a high plateau. On the northeast and north a line of



A TURN OF THE TRAIL AT BRIGHT ANGEL.

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cliffs face this plateau by a bold escarpment of rock. Climb these cliffs and you must ascend from 800 to 1,000 feet, but on their summit you will stand upon a plateau stretching away to the north. Now turn to face the south and you will overlook the cliff and what appears to be a valley below. From the foot of the cliff the country rises to the south to a great plateau through which the Marble and the Grand canyons are carved. This plateau terminates abruptly on the west by the Grand Wash Cliffs, which is a high escarpment caused by a "fault" (as the geologist calls it), that is, the strata of sandstone and limestone are broken off, and to the west of the fracture they are dropped down several thousand feet, so that standing upon the edge of the plateau above the Grand Wash Cliffs you may look off to the west over a vast region of desert from which low volcanic mountains rise that seem like purple mounds in sand-clad lands.

On the east the great plateau breaks down in a very irregular way into the valley of the Little Colorado, and where the railroad ascends the plateau from the east it passes over picturesque canyons that run down into the Little Colorado. On the south the plateau is merged into the great system of mountains that stand in southern Arizona. Where the plateau ends and the mountains begin is not a well-defined line. The plateau through which the Grand Canyon is cut is a region of great scenic interest. Its surface is from six to more than eight thousand feet above the level of the sea. The Grand Plateau is composed of many subsidiary plateaus, each one having its own peculiar and interesting feature.

The Kaibab Plateau, to the northeast of the Grand Canyon, is covered with a pine forest which is intercepted by a few meadows with here and there a pond or lakelet. It is the home of deer and bear.

To the west is the Shinumo Plateau in which the Shinumo Canyon is carved; and on the cliffs of this canyon and in the narrow valley along its course the Shinumo ruins are found—the relics of a prehistoric race.

To the west of the Shinumo Plateau is the Kanab Plateau, with ruins scattered over it, and on its northern border the beautiful Mormon town of Kanab is found, and the canyon of Kanab Creek separates the Shinumo Plateau from the Kanab Plateau. It begins as a shallow gorge and gradually increases in depth until it reaches the Colorado River itself, at a depth of more than 4,000 feet below the surface. Vast amphitheaters are found in its walls and titanic pinnacles rise from its depths. One Christmas day I waded up this creek. It was one of the most delightful walks of my life, from a land of flowers to a land of snow.

To the west of the Kanab Plateau are the Uinkaret Mountains—an immense group of volcanic cones upon a plateau. Some of these cones stand very near the brink of the Grand Canyon and from one of them a flood of basalt was poured into the canyon itself. Not long ago geologically, but rather long when reckoned in years of human history, this flood of lava rolled down the canyon for more than *fifty miles*, filling it to the depth of *two or three hundred feet* and diverting the course of the river against one or the other of its banks. Many of the cones are of red cinder, while sometimes the lava is piled up into huge mountains which are covered with forests. To the west of the Uinkaret Mountains spreads the great Shiwits Plateau, crowned by Mount Dellenbough.

Past the south end of these plateaus runs the Colorado River; southward through Marble Canyon and in the Grand Canyon, then northwestward past the Kaibab and Shinumo Canyon, then southwestward past the Kanab Plateau, Uinkaret Mountains to



AYER PEAK, GRAND VIEW.

Copyright, 1898, by H. G. Pinsky

the southernmost point of the Shiwits Plateau and then northwestward to the Grand Wash Cliffs. Its distance in this course is little more than 300 miles—but the three hundred miles of river are set on every side with cliffs, buttes, towers, pinnacles, amphitheaters, caves and terraces, exquisitely storm-carved and painted in an endless variety of colors.

The plateau to the south of the Grand Canyon, which we need not describe in parts, is largely covered with a gigantic forest. There are many volcanic mountains and many treeless valleys. In the high forests there are beautiful glades with little stretches of meadow which are spread in summer with a parterre of flowers of many colors. This upper region is the garden of the world. When I was first there bear, deer, antelope and wild turkeys abounded, but now they are becoming scarce. Widely scattered throughout the plateau are small canyons, each one a few miles in length and a few hundred feet in depth. Throughout their course cliff-dweller ruins are found. In the highland glades and along the valley, pueblo ruins are widely scattered, but the strangest sights of all the things due to prehistoric man are the cave dwellings that are dug in the tops of cinder cones and the villages that were built in the caves of volcanic cliffs. If now I have succeeded in creating a picture of the plateau I will attempt a brief description of the canyon.

### THE ROMANCE OF A MORMON.

Go with me to the mouth of the Paria River, at the head of Marble Canyon; for this is continuous with the Grand Canyon. The river cuts the great plateau into two unequal parts, the larger one to the north. A little glen two or three miles above the mouth of the Paria has become historic ground, for it was for several years the resort and hiding place of a man who is famous in the history of Utah, whom I met as I wandered up this canyon valley on my second exploring trip to the region.

When a mile or two above the mouth of the Paria, in making a turn around the cliff, I was surprised to see a little rude stone house, and as I approached it a woman opened the door and hastily reappeared with a gun in her hand. She was quickly followed by a man, also with a gun. In a threatening attitude they came out to meet me; being unarmed myself I spoke to them by bidding them good-day and making some pleasant remark, but not until I had heard the woman say to the man, "Don't shoot, he's all right." I entered into a conversation with them and they invited me to eat melons, which I did with gusto, and we parted with expressions of good will—for they seemed very much interested in my explorations and came down to the river to see me off.

In subsequent years I renewed the acquaintance and learned their history. This was John D. Lee and his wife Emma. John D. Lee is well known as a man who was executed for the part he took in the Mountain Meadow Massacre. I need not say more of him than that he was a man of very remarkable character, exceedingly devout and willing to die for the Mormon religion, for which, from the standpoint of his friends, he fell a martyr.

His wife was a convert to the religion of the Latter Day Saints in England, or perhaps in Wales, and came to this country as a Mormon immigrant. She was a member of a party that went from the Missouri River to Salt Lake with handcarts. She was an athlete, and as she expressed it to me at one time, she could "whip her weight in wild-cats"—a figure of speech which she got from the Mormon pioneers. She speedily developed great skill in the use of the rifle, and on the march she was detailed with the

hunters to kill game, such as buffalo, antelope, deer, sheep and the many game-birds found on the plains, and her success as a hunter relieved her of the toil of pushing a cart. On reaching Salt Lake City she became one of the wives of John D. Lee and went with him on missionary work to the frontier settlements, where she lived to some extent among the Indians. Subsequently she fled with her husband into the depths of the canyon region. This was after the Mountain Meadow Massacre was investigated by the general government, and the pair naturally went for prudential reasons. After his surrender she was true to him in his imprisonment, and wrote him letters of encouragement and received letters from him. Some time after his death she married a ranchman from southern California who brought a herd of horses into the valley of the Paria. With him she migrated to Arizona, where the pair kept a boarding house for men who were building the Atlantic & Pacific Railroad.

Finally they settled at Holbrook and built a hotel. When I was there last she was still keeping the hotel, but the majestic woman with piercing eyes and beautiful form—the herculean Venus—was now older and somewhat corpulent.

### MARBLE CANYON.

Above the Paria the great river runs down a canyon which it has cut through one plateau. On its way it flows with comparative quiet through beautiful scenery, with glens that are vast amphitheaters which often overhang great springs and ponds of water deeply embosomed in the cliffs. From the southern escarpment of this plateau the great Colorado Plateau rises by a comparatively gentle acclivity, and Marble Canyon starts



A BRIEF REST, BRIGHT ANGEL TRAIL.

Photo, G. L. Rose.

with walls but a few score feet in height until they reach an altitude of about five thousand feet. On the way the channel is cut into beds of rock of lower geologic horizon, or greater geologic age. These rocks are sandstones and limestones. Some beds are very hard, others are soft and friable. The friable rocks wash out and the harder rocks remain projecting from the walls, so that every wall presents a set of stony shelves. These shelves rise along the wall toward the south as new shelves set in from below.

In addition to this shelving structure the walls are terraced and the cliffs of the canyon are set back one upon the other. Then these canyon walls are interrupted by side streams which themselves have carved lateral canyons, some small, others large, but all deep. In these side gorges the scenery is varied and picturesque; deep clefts are seen here and there as you descend the river—clefts furnished with little streams along which mosses and other plants grow. At low water the floor of the great canyon is more or less exposed, and where it flows over limestone rocks beautiful marbles are seen in many colors; saffron, pink, and blue prevail. Sometimes a façade or wall appears rising vertically from the water for thousands of feet. At last the canyon abruptly ends in a confusion of hills beyond which rise towering cliffs, and the group of hills are nestled in the bottom of a valley-like region which is surrounded by cliffs more than a mile in altitude.

## THE GRAND CANYON.

From here on for many miles the whole character of the canyon changes. First a dike appears; this is a wall of black basalt; crossing the river it is of lava thrust up from below through a huge crevice broken in the rock by earthquake agency. On the east the Little Colorado comes; here it is a river of salt water, and it derives its salt a few miles up the stream. The main Colorado flows along the eastern and southern wall. Climbing this for a few hundred feet you may look off toward the northwest and gaze at the cliffs of the Kaibab Plateau.

This is the point where we built a trail down a side canyon where Mr. Walcott was to make his winter residence and study of the region; it is very complicated and exhibits a vast series of unconformable rocks of high antiquity. These lower rocks are of many colors; in large part they are shales. The region, which appears to be composed of bright-colored hills washed naked by the rain, is in fact beset with a multitude of winding canyons with their own precipitous walls. It is a region of many canyons in the depths of the Grand Canyon itself.

In this beautiful region Mr. Walcott, reading the book of geology, lived in a summerland during all of a long winter while the cliffs above were covered with snow which prevented his egress to the world. His companions, three young Mormons, longing for a higher degree of civilization, gazed wistfully at the snow-clad barriers by which they were enclosed. One was a draughtsman, another a herder of his stock and the third his cook. They afterward told me that it was a long winter of homesickness and that months dragged away as years, but Mr. Walcott himself had the great book of geology to read and to him it was a winter of delight.

A half dozen miles below the basaltic wall the river enters a channel carved in 800 or a thousand feet of dark gneiss of very hard rock. Here the channel is narrow and very swift and beset with rapids and falls. On the south and southwest the wall rises abruptly from the water to the summit of the plateau for about 6,000 feet, but across the river on the north and west mountains of gneiss and quartzites appear, sometimes



rising to the height of a thousand feet. These are mountains in the bottom of a canyon. The buttes and plateaus of the inter-canyon region are composed of shales, sandstones and limestones, which give rise to vast architectural shelving and to pinnacles and towers of gigantic proportions, the whole embossed with a marvelously minute system of fretwork carved by the artistic clouds. Looking beyond these mountains, buttes and plateaus—vistas of the walls of the great plateau are seen. From these walls project salients and deep re-entrant angles appear.

The whole scene is forever reminding you of mighty architectural pinnacles and towers and balustrades and arches and columns with lattice work and delicate carving. All of these architectural features are sublime by titanic painting in varied hues—pink, red, brown, lavender, gray, blue and black. In some lights the saffron prevails, in other lights vermilion, and yet in other lights the grays and blacks predominate. At times, and perhaps in rare seasons, clouds and cloudlets form in the canyon below and wander among the side canyons and float higher and higher until they are dissolved in the upper air, or perhaps they accumulate to hide great portions of the landscape. Then through rifts in the clouds vistas of Wonderland are seen. Such is that portion of the canyon around the great south bend of the Colorado River past the point of the Kaibab Plateau.

#### AS SEEN BY THE GEOLOGIST.

In the last chapter of my book entitled "The Canyons of the Colorado" I have described the Grand Canyon in the following terms:

The Grand Canyon is a gorge 217 miles in length, through which flows a great river with many storm-born tributaries. It has a winding way, as rivers are wont to have. Its banks are vast structures of adamant, piled up in forms rarely seen in the mountains.

Down by the river the walls are composed of black gneiss, slates and schists, all greatly implicated and traversed by dikes of granite. Let this formation be called the black gneiss. It is usually about 800 feet in thickness.

Then over the black gneiss are found 800 feet of quartzites, usually in very thin beds of many colors, but exceedingly hard, and ringing under the hammer like phonolite. These beds are dipping and unconformable with the rocks above. While they make but 800 feet of the wall or less they have a geologic thickness of 12,000 feet. Set up a row of books aslant; it is ten inches from the shelf to the top of the line of books, but there may be three feet of the books measured directly through the leaves. So these quartzites are aslant, and though of great geologic thickness they make but 800 feet of the wall. Your books may have many-colored bindings and differ greatly in their contents; so these quartzites vary greatly from place to place along the wall, and in many places they entirely disappear. Let us call this formation the variegated quartzite.

Above the quartzites there are 500 feet of sandstones. They are of a greenish hue, but are mottled with spots of brown and black by iron stains. They usually stand in a bold cliff, weathered in alcoves. Let this formation be called the cliff sandstone.

Above the cliff sandstone there are 700 feet of bedded sandstones and limestones, which are massive sometimes and sometimes broken into thin strata. These rocks are often weathered in deep alcoves. Let this formation be called the alcove sandstone.

Over the alcove sandstone there are 1,600 feet of limestone, in many places a beautiful marble, as in Marble Canyon. As it appears along the Grand Canyon it is always stained a brilliant red, for immediately over it there are thin seams of iron, and the storms have

painted these limestones with pigments from above. Altogether this is the red-wall group. It is chiefly limestone. Let it be called the red-wall limestone.

Above the red wall there are 800 feet of gray and bright red sandstone, alternating in beds that look like vast ribbons of landscape. Let it be called the banded sandstone.

And over all, at the top of the wall, is the Aubrey limestone, 1,000 feet in thickness. This Aubrey has much gypsum in it, great beds of alabaster that are pure white in comparison with the great body of limestone below. In the same limestone there are enormous beds of chert, agates and cornelians. This limestone is especially remarkable for its pinnacles and towers. Let it be called the tower limestone.

These are the elements with which the walls are constructed, from black buttress below to alabaster tower above. All of these elements weather in different forms and are painted in different colors, so that the wall presents a highly complex façade. A wall of homogeneous granite, like that in the Yosemite, is but a naked wall, whether it be 1,000 or 5,000 feet high. Hundreds and thousands of feet mean nothing to the eye when they stand in a meaningless front. A mountain covered by pure snow 10,000 feet high has but little more effect on the imagination than a mountain of snow 1,000 feet high—it is but more of the same thing—but a façade of seven systems of rock has its sublimity multiplied sevenfold.



*Photo, W. H. Simpson.*

*AT ROWE'S POINT.*

Consider next the horizontal elements of the Grand Canyon. The river meanders in great curves, which are themselves broken into curves of smaller magnitude. The streams that head far back in the plateau on either side come down in gorges and break the wall into sections. Each lateral canyon has a secondary system of laterals, and the secondary canyons are broken by tertiary canyons; so the crags are forever branching, like the limbs of an oak. That which has been described as a wall is such only in its grand effect. In detail it is a series of structures separated by a ramification of canyons, each having its own walls. Thus, in passing down the canyon it seems to be inclosed by walls, but oftener by salients—towering structures that stand between canyons that run back into the plateau. Sometimes gorges of the second or third order have met before reaching the brink of the Grand Canyon, and then great salients are cut off from the wall and stand out as buttes—huge pavilions in the architecture of the canyon. The scenic elements thus described are fused and combined in very different ways.

### ITS LENGTH.

We measured the length of the Grand Canyon by the length of the river running through it, but the running extent of wall cannot be measured in this manner. In the black gneiss, which is at the bottom, the wall may stand above the river for a few hundred yards or a mile or two; then to follow the foot of the wall you must pass into a lateral canyon for a long distance, perhaps miles, and then back again on the other side of the lateral canyon; then along by the river until another lateral canyon is reached, which must be headed in the black gneiss. So for a dozen miles of river through the gneiss there may be a hundred miles of wall on either side. Climbing to the summit of the black gneiss and following the wall in the variegated quartzite, it is found to be stretched out to a still greater length, for it is cut with more lateral gorges. In like manner there is yet greater length of the mottled (or alcove) sandstone wall, and the red wall is still farther stretched out in ever branching gorges.

To make the distance for ten miles along the river by walking along the top of the red wall it would be necessary to travel several hundred miles. The length of the wall reaches its maximum in the banded sandstone, which is terraced more than any of the other formations. The tower limestone wall is less tortuous. To start at the head of the Grand Canyon on one of the terraces of the banded sandstone and follow it to the foot of the Grand Canyon, which by river is a distance of 217 miles, it would be necessary to travel many thousand miles by the winding way; that is, the banded wall is many thousand miles in length.

### AS SEEN BY THE ARTIST.

The traveler in the region of mountains sees vast masses piled up in gentle declivities to the clouds. To see mountains in this way is to appreciate the masses of which they are composed. But the climber among the glaciers sees the elements of which this mass is composed—that it is made of cliffs and towers and pinnacles, with intervening gorges, and the smooth billows of granite seen from afar are transformed into cliffs and caves and towers and minarets.

These two aspects of mountain scenery have been seized by painters, and in their art two classes of mountains are represented; mountains with towering forms that seem ready to topple in the first storm, and mountains in masses that seem to frown defiance

at the tempests. Both classes have told the truth. The two aspects are sometimes caught by our painters severally; sometimes they are combined. Church paints a mountain like a kingdom of glory. Bierstadt paints a mountain cliff where an eagle is lost from sight ere he reaches the summit. Thomas Moran marries these great characteristics, and in his infinite masses, cliffs of immeasurable height are seen.

Thus the elements of the façade of the Grand Canyon change vertically and horizontally. The details of structure can be seen only at close view, but grand effects of structure can be witnessed in great panoramic scenes. Seen in detail, gorges and precipices appear; seen at a distance, in comprehensive views, vast massive structures are presented. The traveler on the brink looks from afar and is overwhelmed with the sublimity of massive forms; the traveler among the gorges stands in the presence of awful mysteries—profound, solemn and gloomy.

#### AS SEEN TRAVELING DOWN STREAM.

For eight or ten miles below the mouth of the Little Colorado, the river is in the variegated quartzites, and a wonderful fretwork of forms and colors, peculiar to this



*Photo, Putnam & Valentine.*

CAMP IN COCONINO FOREST, NEAR POINT SUBLIME.

rock, stretches back for miles to a labyrinth of the red-wall cliff; then below, the black gneiss is entered and soon has reached an altitude of 800 feet and sometimes more than 1,000 feet, and upon this black gneiss all the other structures in their wonderful colors are lifted. These continue for about seventy miles, when the black gneiss below is lost, for the walls are dropped down by the West Kaibab Fault and the river flows in the quartzites.

Then for eighty miles the mottled (or alcove) sandstones are found in the river bed. The course of the canyon is a little south of west and is comparatively straight. At the top of the red-wall limestone there is a broad terrace, two or three miles in width, composed of hills of wonderful forms carved in the banded beds, and back of this is seen a cliff in the tower limestone. Along the lower course of this stretch the whole character of the canyon is changed by another set of complicating conditions. We have now reached a region of volcanic activity. After the canyons were cut nearly to their present depth, lavas poured out and volcanoes were built on the walls of the canyon, but not in the canyon itself, though at places rivers of molten rock rolled down the walls into the Colorado.

The canyon for the next eighty miles is a compound of that found where the river is in the black gneiss and that found where the dead volcanoes stand on the brink of



RIPLY'S BUTTE.

Digitized by Google Photo, W. H. Jackson.

the wall. In the first stretch, where the gneiss is at the foundation, we have a great bend to the south, and in the last stretch, where the gneiss is below and the dead volcanoes above, another great southern detour is found. These two great beds are separated by eighty miles of comparatively straight river.

Let us call this first great bend the Kaibab reach of the canyon, and the straight part the Kanab reach, for the Kanab Creek heads far off in the plateau to the north and joins the Colorado at the beginning of the middle stretch. The third great southern bend is the Shiwits stretch. Thus there are three distinct portions of the Grand Canyon: The Kaibab section, characterized more by its buttes and salients; the Kanab section, characterized by its comparatively straight walls with volcanoes on the brink, and the Shiwits section, which is broken into great terraces with gneiss at the bottom and volcanoes at the top.

### THE WORK OF EROSION.

The erosion represented in the canyons, although vast, is but a small part of the great erosion of the region, for between the cliffs blocks have been carried away far superior in magnitude to those necessary to fill the canyons. Probably there is no portion of the whole region from which there have not been more than a thousand feet degraded, and there are districts from which more than 30,000 feet of rock have been carried away, altogether there is a district of country more than 200,000 square miles in extent, from which, on the average, more than 6,000 feet have been eroded. Consider a rock 200,000 square miles in extent and a mile in thickness, against which the clouds have hurled their storms, and beat it into sands, and the rills have carried the sands into the creeks, and the creeks have carried them into the rivers, and the Colorado has carried them into the sea.

We think of the mountains as forming clouds about their brows, but the clouds have formed the mountains. Great continental blocks are upheaved from beneath the sea by internal geologic forces that fashion the earth. Then the wandering clouds, the tempest-bearing clouds, the rainbow-decked clouds, with mighty power and with wonderful skill, carve out valleys and canyons and fashion hills and cliffs and mountains. The clouds are the artists sublime.

### WINTER AND CLOUD EFFECTS.

In winter some of the characteristics of the Grand Canyon are emphasized. The black gneiss below, the variegated quartzite, and the green or alcove sandstone form the foundation for the mighty red wall. The banded sandstone entablature is crowned by the tower limestone. In winter this is covered with snow. Seen from below, these changing elements seem to graduate into the heavens, and no plane of demarcation between wall and blue firmament can be seen. The heavens constitute a portion of the façade and mount into a vast dome from wall to wall, spanning the Grand Canyon with empyrean blue. So the earth and the heavens are blended in one vast structure.

When the clouds play in the canyon, as they often do in the rainy season, another set of effects is produced. Clouds creep out of canyons and wind into other canyons. The heavens seem to be alive, not moving as move the heavens over a plain, in one direction with the wind, but following the multiplied courses of these gorges. In this manner the little clouds seem to be individualized, to have wills and souls of their own

and to be going on diverse errands—a vast assemblage of self-willed clouds, faring here and there, intent upon purposes hidden in their own breasts. In imagination the clouds belong to the sky, and when they are in the canyon the skies come down into the gorges and cling to the cliffs and lift them up to immeasurable heights, for the sky must still be far away. Thus they lend infinity to the walls.

### A WORLD OF FORM, COLOR AND MUSIC.

The wonders of the Grand Canyon cannot be adequately represented in symbols of speech nor by speech itself. The resources of the graphic art are taxed beyond their powers in attempting to portray its features. Language and illustration combined must fail. The elements that unite to make the Grand Canyon the most sublime spectacle in nature are multifarious and exceedingly diverse.

Besides the elements of form there are elements of color, for here the colors of the heavens are rivaled by the colors of the rocks. The rainbow is not more replete with hues.

But form and color do not exhaust all the divine qualities of the Grand Canyon. It is the land of music. The river thunders in perpetual roar, swelling in floods of music when the storm gods play upon the rocks, and fading away in soft and low murmurs when the infinite blue of heaven is unveiled. With the melody of the great tide rising and falling, swelling and vanishing forever, other melodies are heard in the gorges of the lateral canyons, while the waters plunge in the rapids among the rocks or leap in great cataracts. Thus the Grand Canyon is a land of song. Mountains of music swell in the rivers, hills of music billow in the creeks and meadows of music murmur in the rills that ripple over the rocks. Altogether it is a symphony of multitudinous melodies. All this is the music of waters. The adamant foundations of the earth have been wrought into a sublime harp, upon which the clouds of the heavens play with mighty tempests or with gentle showers.

### ITS VASTNESS.

The glories and the beauties of form, color and sound unite in the Grand Canyon—forms unrivaled even by the mountains, colors that vie with sunsets, and sounds that span the diapason from tempest to tinkling raindrop, from cataract to bubbling fountain.

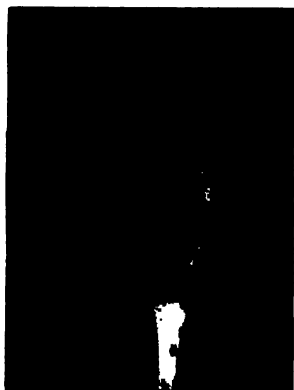
But more—it is a vast district of country. Were it a valley plain it would make a state. It can be seen only in parts from hour to hour and from day to day and from week to week and from month to month. A year scarcely suffices to see it all.

It has infinite variety and no part is ever duplicated. Its colors, though many and complex at any instant, change with the ascending and declining sun; lights and shadows appear and vanish with the passing clouds and the changing seasons mark their passage in changing colors.

You cannot see the Grand Canyon in one view, as if it were a changeless spectacle from which a curtain might be lifted, but to see it you have to toil from month to month through its labyrinths. It is a region more difficult to traverse than the Alps or the Himalayas, but if strength and courage are sufficient for the task, by a year's toil a concept of sublimity can be obtained never again to be equaled on the hither side of paradise.

# THE GREATEST THING IN THE WORLD.

BY CHARLES F. LUMMIS.



CHARLES F. LUMMIS.

Mr. Lummis is editor of the *Out West* magazine at Los Angeles. He writes books that are read. Volumes like "The Land of Poco Tiempo" and "Strange Corners of Our Country" reveal a man who really knows our immense Southwest from having lived its strenuous life, and who can therefore adequately interpret its deserts and mountains, its people and their customs.

He says what he thinks, and thinks his own thoughts in his own way. And the "way" is that of Anglo-Saxon directness. We listen, even if we dissent. Usually we are convinced, but always charmed.

Soon after leaving Harvard he walked from Chillicothe, Ohio, to Los Angeles, following for the most part the old Santa Fe trail. His experiences are vividly told in his volume "A Tramp Across the Continent." His journeys on foot have embraced Old Mexico, South America and every interesting corner, known and unknown, of the semi-arid region.

Every Pueblo Indian in New Mexico and Arizona is his friend. He has lived among them, studied them, encouraged them, and best of all, has been to them an example of right living and fair treatment. Lummis' most notable characteristic is his intense Americanism. He believes in America for Americans. Knowing this great Southwest, he has always pleaded to have the tide of eager tourists turn toward it as an unmatched wonderland.

Mr. Lummis' account of the greatest thing in the world is here first printed:

## THE SOUTHWESTERN WONDERLAND.

**T**HE greatest thing in the world." That is a large phrase and an overworked one, and hardened travelers do not take it lightly upon the tongue. Noticeably it is most glibly in use with those but lately, and for the first time, wandered beyond their native state or county, and as every province has its own local brag of biggest things, the too credulous tourist will find a superlative everywhere. And superlatives are unsafe without wide horizons of comparison.

Yet in every sort there is, of course, somewhere "the biggest thing in the world" of its kind. It is a good word, when spoken in season and not abused in careless ignorance.

I believe there is and can be no dispute that the term applies literally to several things in the immediate region of the Grand Canyon of Arizona. As I have more than once written (and it never yet has been controverted), probably no other equal area on earth contains so many supreme marvels of so many kinds—so many astounding sights, so many masterpieces of Nature's handiwork, so vast and conclusive an encyclopedia of the world-building processes, so impressive monuments of prehistoric man, so many triumphs of man still in the tribal relation—as what I have called the Southwestern Wonderland. This includes a large part of New Mexico and Arizona, the area which geographically and ethnographically we may count as the Grand Canyon region. Let me mention a few wonders:

The largest and by far the most beautiful of all petrified forests, with several hundred square miles whose surface is carpeted with agate chips and dotted with agate trunks two





FROM KAIBAB PLATEAU, LOOKING SOUTH.

to four feet in diameter; and just across one valley a buried "forest" whose huge silicified—not agatized—logs show their ends under fifty feet of sandstone.

The largest natural bridge in the world—200 feet high, over 500 feet span and over 600 feet wide, up and down stream and with an orchard on its top and miles of stalactite caves under its abutments.

The largest variety and display of geologically recent volcanic action in North America; with sixty-mile lava flows, 1,500-foot blankets of creamy tufa cut by scores of canyons; hundreds of craters and thousands of square miles of lava beds, basalt and cinders, and so much "volcanic glass" (obsidian) that it was the chief tool of the prehistoric population.

The largest and the most impressive villages of cave-dwellings in the world, most of them already abandoned "when the world-seeking Genoese" sailed.

The peerless and many-storied cliff-dwellings—castles and forts and homes in the face of wild precipices or upon their tops—an aboriginal architecture as remarkable as any in any land.

The twenty-six strange communal town republics of the descendants of the "cliff-dwellers," the modern Pueblos; some in fertile valleys, some (like Acoma and Moki) perched on barren and dizzy cliff tops. The strange dances, rites, dress and customs of this ancient people who had solved the problem of irrigation, six-story house building and clean self-government and even women's rights—long before Columbus was born.

The noblest Caucasian ruins in America, north of Mexico—the great stone and adobe churches reared by Franciscan missionaries, near three centuries ago, a thousand miles from the ocean, in the heart of the Southwest.

Some of the most notable tribes of savage nomads—like the Navajos, whose blankets and silver work are pre-eminent, and the Apaches, who, man for man have been probably the most successful warriors in history.

All these, and a great deal more, make the Southwest a wonderland without a parallel. There are ruins as striking as the storied ones along the Rhine, and far more remarkable. There are peoples as picturesque as any in the Orient, and as romantic as the Aztecs and the Incas of whom we have learned such gilded fables, and there are natural wonders which have no peers whatever.

## OF THE CANYON, AND OTHER WONDERS.

At the head of the list stands the Grand Canyon of the Colorado; whether it is the "greatest wonder of the world" depends a little on our definition of "wonder." Possibly it is no more wonderful than the fact that so tiny a fraction of the people who confess themselves the smartest in the world have ever seen it. As a people we dodder abroad to see scenery incomparably inferior.

But beyond peradventure it is the greatest chasm in the world, and the most superb. Enough globe-trotters have seen it to establish that fact. Many have come cynically prepared to be disappointed; to find it overdrawn and really not so stupendous as something else. It is, after all, a hard test that so be-bragged a wonder must endure under the critical scrutiny of them that have seen the earth and the fullness thereof. But I never knew the most self-satisfied veteran traveler to be disappointed in the Grand Canyon, or to patronize it. On the contrary, this is the very class of men who can best comprehend it, and I have seen them fairly break down in its awful presence.

I do not know the Himalayas except by photograph and the testimony of men who have explored and climbed them, and who found the Grand Canyon an absolutely new experience. But I know the American continents pretty well, and have tramped their mountains, including the Andes—the next highest mountains in the world, after half a dozen of the Himalayas—and of all the famous quebradas of the Andes there is not one that would count five per cent on the Grand Canyon of the Colorado. For all their 25,000-foot peaks, their blue-white glaciers, imminent above the bald plateau, and green little bolsones (“pocket valleys”) of Chile, Peru, Bolivia and Ecuador; for all their tremendous active volcanoes, like Saugay and Cotopaxi; for all an earthquake activity beside which the “shake” at Charleston, was mere paper-doll play; for all the steepest gradients in the world (and Peru is the only place in the world where a river falls 17,000 feet in 100 miles)—in all that marvelous 3,000-mile procession of giantism there is not one canyon which any sane person would for an instant compare with that titanic gash that the Colorado has chiseled through a comparatively flat upland. Nor is there anything remotely approaching it in all the New World. So much I can say at first hand. As for the Old World, the explorer who shall find a gorge there one-half as great will win undying fame.

The quebrada of the Apu-Rimac is a marvel of the Andes, with its vertiginous depths and its suspension bridge of wild vines. The Grand Canyon of the Arkansas, in Colorado, is a noble little slit in the mountains. The Franconia and White Mountain notches in New Hampshire are beautiful. The Yosemite and the Yellowstone canyons surpass the world, each in its way. But if all of these were hung up on the opposite wall of the Grand Canyon from you the chances are fifty to one that you could not tell t’other from which, nor any of them from the hundreds of other canyons which rib that vast vertebrate gorge. If the falls of Niagara were installed in the Grand Canyon between your visits and you knew it by the newspapers—next time you stood on that dizzy rim-rock you would probably need good field-glasses and much patience before you could locate that cataract which in its place looks pretty big. If Mount Washington were plucked up bodily by the roots—not from where you see it, but from sea-level—and carefully set down in the Grand Canyon, you probably would not notice it next morning, unless its dull colors distinguished it in that innumerable congress of larger and painted giants.

All this, which is literally true, is a mere trifle of what might be said in trying to fix a standard of comparison for the Grand Canyon. But I fancy there is no standard adjustable to the human mind. You may compare all you will—eloquently and from wide experience, and at last all similes fail. The Grand Canyon is just the Grand Canyon, and that is all you can say. I never have seen anyone who was prepared for it. I never have seen anyone who could grasp it in a week’s hard exploration; nor anyone, except some rare Philistine, who could even think he had grasped it. I have seen people rave over it; better people struck dumb with it; even strong men who cried over it; but I have never yet seen the man or woman that *expected* it.

It adds seriously to the scientific wonder and the universal impressiveness of this unparalleled chasm that it is not in some stupendous mountain range, but in a vast, arid, lofty floor of nearly 100,000 square miles—as it were, a crack in the upper story of the continent. There is no preparation for it. Unless you had been told, you would no more dream that out yonder amid the pines the flat earth is slashed to its very bowels, than you would expect to find an iceberg in Broadway. With a very ordinary running

jump from the spot where you get your first glimpse of the canyon you could go down 2,000 feet without touching. It is sudden as a well.

But it is no mere cleft. It is a terrific trough 6,000 to 7,000 feet deep, ten to twenty miles wide, hundreds of miles long, peopled with hundreds of peaks taller than any mountain east of the Rockies, yet not one of them with its head so high as your feet, and all ablaze with such color as no eastern or European landscape ever knew, even in the Alpen-glow. And as you sit upon the brink the divine scene-shifters give you a new canyon every hour. With each degree of the sun's course the great countersunk mountains we have been watching fade away, and new ones, as terrific, are carved by the westering shadows. It is like a dissection of the whole cosmogony. And the purple shadows, the dazzling lights, the thunderstorms and snowstorms, the clouds and the rainbows that shift and drift in that vast subterranean arena below your feet! And amid those enchanted towers and castles which the vastness of the scale leads you to call "rocks," but which are in fact as big above the river-bed as the Rockies from Denver, and bigger than Mount Washington from Fabyan's or the Glen!

#### IN CONCLUSION.

The Grand Canyon country is not only the hugest, but the most varied and instructive example on earth of one of the chief factors of earth-building—erosion. It is the mesa country—the Land of Tables. Nowhere else on the footstool is there such an example of deep-gnawing water or of water high-carving. The sandstone mesas of the Southwest, the terracing of canyon walls, the castellation, battlementing and cliff-making, the cutting down of a whole landscape except its precipitous islands of flat-topped rock, the thin lava table-cloths on tables 100 feet high—these are a few of the things which make the Southwest wonderful alike to the scientist and the mere sight-seer.

That the canyon is not "too hard" is perhaps sufficiently indicated by the fact that I have taken thither ladies and children and men in their seventies, when the easiest way to get there was by a seventy-mile stage ride, and that at six years old my little girl walked all the way from rim to bottom of canyon and came back on a horse the same day, and was next morning ready to go on a long tramp along the rim.



THE END OF THE TRAIL, BRIGHT ANGEL.

# A GASH IN NATURE'S BARED BREAST.

BY JOHN L. STODDARD.



JOHN L. STODDARD.

For eighteen years Mr. John L. Stoddard's illustrated lectures on travel, art and scenery were attended by large audiences. He fostered a love for our native land, particularly the southwest corner of it, and was the chief prophet of a new school of travel whereby one may sit in a cushioned chair and see the world and all that therein is. A Stoddard lecture was the next best thing to taking the trip for one's self.

The enthusiasm of the man, his wide learning, his keen observation, his infinite painstaking and his poetic temperament, all contributed to the success which crowned his efforts.

At last tiring of platform work, Mr. Stoddard arranged with Balch Bros. Co., Boston, to publish his lectures. From one of the volumes of the series the following extracts concerning the Grand Canyon are made by kind permission of the publishers and the author. For the last two years Mr. Stoddard has been traveling in Europe. His visit to the canyon was made in 1897, accompanied by several Santa Fe officials, also by W. H. Jackson, the scenic artist, and Mr. Andrew McNally, the publisher.

## ITS SILENCE.

**T**HE Grand Canyon of Arizona is Nature wounded unto death and lying stiff and ghastly, with a gash 200 miles in length and a mile in depth in her bared breast, from which is flowing fast a stream of life-blood called the Colorado. Many grand objects in the world are heralded by sound; the solemn music of Niagara, the roar of active geysers in the Yellowstone, the intermittent thunder of the sea upon a rocky coast, are all distinguishable at some distance, but over the Grand Canyon of the Colorado broods a solemn silence. No warning voice proclaims its close proximity; no partial view prepares us for its awful presence. \* \* \*

The globe itself seemed to have suddenly yawned asunder, leaving me trembling on the hither brink of two dissevered hemispheres. Vast as the bed of a vanished ocean, deep as Mount Washington, riven from its apex to its base, the grandest canyon on our planet lay glittering below me in the sunlight like a submerged continent, drowned by an ocean that had ebbed away. At my very feet, so near that I could have leaped at once into eternity, the earth was cleft to a depth of 6,600 feet—not by a narrow gorge like other canyons, but by an awful gulf within whose cavernous immensity the forests of the Adirondacks would appear like jackstraws, the Hudson Palisades would be an insignificant stratum, Niagara would be indiscernible, and cities could be tossed like pebbles. \* \* \*

## SERMONS IN STONE.

In every direction I beheld below me a tangled skein of mountain ranges, thousands of feet in height, which the Grand Canyon's walls enclosed as if it were a huge sarcophagus holding the skeleton of an infant world. It is evident, therefore, that all the other canyons of our globe are, in comparison with this, what pygmies are to a giant, and that

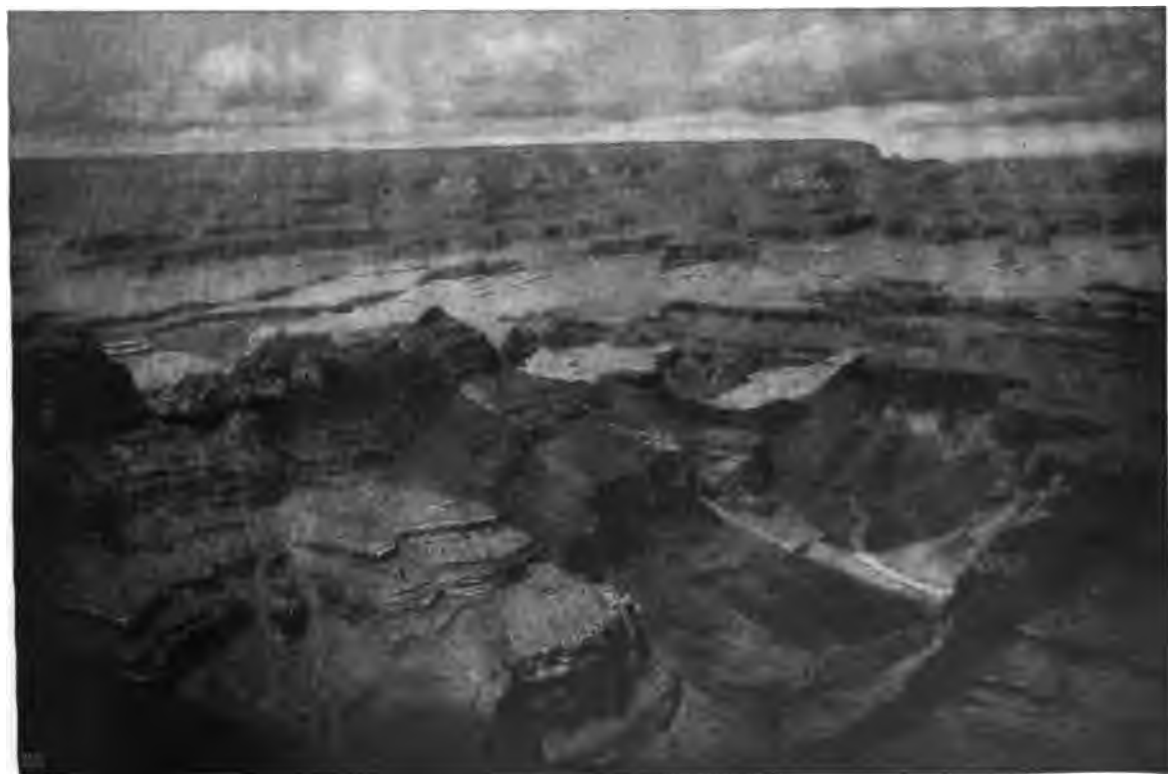
## *A GASH IN NATURE'S BARED BREAST. JOHN L. STODDARD.*

the name Grand Canyon, which is often used to designate some relatively insignificant ravine, should be in truth applied only to the stupendous earth-gulf of Arizona. \* \* \*

Though the greater part of the population of the world could be assembled here, one sees no worshipers, save an occasional devotee of Nature, standing on the canyon's rim, lost in astonishment and hushed in awe. These temples were, however, never intended for a human priesthood. A man beside them is a pygmy. His voice here would be little more effective than the chirping of an insect. The God-appointed celebrant, in the cathedrals of this canyon, must be Nature. Her voice alone can rouse the echoes of these mountains into deafening peals of thunder. Her metaphors are drawn from an experience of ages. Her prayers are silent, rapturous communings with the Infinite. Her hymns of praise are the glad songs of birds; her requiems are the moanings of the pines; her symphonies the solemn roaring of the winds. "Sermons in stone" abound at every turn; and if, as the poet has affirmed, "an undevout astronomer is mad," with still more truth can it be said that those are blind who in this wonderful environment look not "through Nature up to Nature's God." \* \* \*

### SEEN IN THE MORNING.

To stand upon the edge of this stupendous gorge as it receives its earliest greeting from the god of day, is to enjoy in a moment compensation for long years of ordinary uneventful life. When I beheld the scene, a little before daybreak, a lake of soft, white



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ACROSS THE CANYON FROM GRAND VIEW.

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*A GASH IN NATURE'S BARED BREAST. JOHN L. STODDARD.*

clouds was floating round the summits of the canyon mountains, hiding the huge crevasse beneath, as a light coverlet of snow conceals a chasm in an Alpine glacier. I looked with awe upon this misty curtain of the morn, for it appeared to me symbolic of the grander curtain of the past which shuts out from our view the awful struggles of the elements enacted here when the grand gulf was being formed. At length, however, as the light increased, this thin, diaphanous covering was mysteriously withdrawn and when the sun's disk rose above the horizon, the huge façades of the temples which looked eastward grew immediately rosy with the dawn; westward, projecting cliffs sketched on the opposite sides of the ravines, in dark blue silhouettes, the evanescent forms of castles, battlements, and turrets from which some shreds of white mist waved like banners of capitulation; stupendous moats beneath them were still black with shadow; while clouds filled many of the minor canyons, like vapors rising from enormous caldrons. Gradually, as the solar couriers forced a passage into the narrow gullies and drove the remnant of night's army from its hiding-places, innumerable shades of purple, yellow, red and brown appeared, varying according to the composition of the mountains, and the enormous void was gradually filled to the brim with a luminous haze, which one could fancy was the smoke of incense from its countless altars. \* \* \*

A descent into the canyon is essential for a proper estimate of its details, and one can



ON GRAND VIEW POINT.

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## *A GASH IN NATURE'S BARED BREAST. JOHN L. STODDARD.*

never realize the enormity of certain cliffs and the extent of certain valleys till he has crawled like a maimed insect at their base and looked thence upward to the narrowed sky. Yet such an investigation of the canyon is, after all, merely like going down from a balloon into a great city to examine one of its myriad streets, since any gorge we may select for our descending path is but a tiny section of a labyrinth. That which is unique and incomparable here is the view from the brink. \* \* \*

It is only when one stands beside a portion of this lonely river and sees it shooting stealthily and swiftly from a rift in the titanic cliffs and disappearing mysteriously between dark gates of granite, that he realizes what a heroic exploit the first navigation of this river was; for nothing had been known of its imprisoned course through this entanglement of chasms, or could be known, save by exploring it in boats, so difficult of access were, and are, the two or three points where it is possible for a human being to reach its perpendicular banks. Accordingly, when the valiant navigators sailed into these mysterious waters they knew that there was almost every chance against the possibility of a boat's living in such a seething current, which is, at intervals, punctured with a multitude of tusk-like rocks, tortured into rapids, twisted into whirlpools or broken by falls; while in the event of shipwreck they could hope for little save naked precipices to cling to for support. All honor, then, to Powell and his comrades. \* \* \*

### A LAST VIEW.

On my last evening in the pine tree camp I left my tent and walked alone to the edge of the Grand Canyon. The night was white with the splendor of the moon. A shimmering lake of silvery vapor rolled its noiseless tide against the mountains and laved the terraces of the Hindu shrines. The lunar radiance, falling into such profundity, was powerless to reveal the plexus of subordinate canyons, and even the temples glimmered through the upper air like wraiths of the huge forms which they reveal by day. Advancing cautiously to an isolated point upon the brink, I lay upon my face and peered down into the spectral void. No voice of man, nor cry of bird, nor roar of beast resounded through those awful corridors of silence. Even thought had no existence in that sunken realm of chaos. I felt as if I were the sole survivor of the deluge. Only the melancholy murmur of the wind ascended from that sepulchre of centuries. It seemed the requiem for a vanished world. \* \* \*



PLATEAU OVERLOOKING RIVER, FOOT OF BRIGHT ANGEL TRAIL.



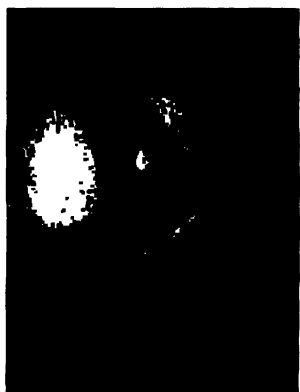


UPSTREAM FROM BRIGHT ANGEL POINT.

Photo, Putnam & Valentine.

# ENGINEERING IN THE DEPTHS OF THE GRAND CANYON.

BY ROBERT BREWSTER STANTON.



ROBERT BREWSTER STANTON.

In the front rank of Grand Canyon explorers stands Robert Brewster Stanton. Twenty years after Powell's exploration of the Colorado, Stanton the engineer, unheralded, headed a party formed for the purpose of making the survey of a railway from Grand Junction to the Gulf of California. Disaster and death followed the first expedition.

Undaunted, Stanton six months later, fully equipped, renewed the attempt. Complete success rewarded his efforts. After a journey lasting four and one-half months he reached tide water in the Gulf of California, and Stanton is the only explorer who has made a continuous journey down the entire length of the Colorado.

His contribution to progress was little less than Powell's. His mission demanded all the exacting characteristics which make up the quality of the pioneer. He combined the exact knowledge of his profession with great personal bravery, keen observation and indomitable energy.

The following article, fresh from his pen, vivid and eloquent, shows that the memories of thrilling adventures and the majesty of this "Titan of Chasms" are still with him.

## THE PIONEERS.



HAVE often thought if the traveler on our great transcontinental railways but knew something of the arduous labors of those who prepared for him the luxury and comfort of modern travel, he might think with kindly feeling of the pioneers—the civil engineers—who made it possible to open up the wonders of our great western empire through and beyond the Rockies, and who, in so many instances, while blazing the way, laid down their very lives that he might travel in veritable palaces to and fro through the land.

It has been my fortune to do some part of this pioneer work in the far west during the past thirty years, beginning with the survey of the Atlantic & Pacific Railway, now a part of the Santa Fe system. Few travelers on the luxurious California Limited, as they branch off to take a look at the wonders of the Grand Canyon of Arizona, remember that some twelve years ago a railway was projected to run along the bottom of that deep gorge, and few know, perhaps, what it cost in hardships and in lives to make the reconnaissance and preliminary survey.

As you stand on the brink of some overhanging cliff at the canyon's rim and look down thousands of feet into its depths, let me repeat some of the experiences of our journey along that "little silver thread" as it looks to you from where you stand, and yet when reached is a wild, raging, roaring torrent, which with its 520 rapids, falls and cataracts, is a pathway terrible to contemplate and much more so to ride upon in a frail boat.

Previous to this time, May, 1889, no party had traversed these canyons except Major J. W. Powell in 1869, and no one had ever made a continuous journey along the waters of this river from its head to its mouth.

Our first expedition was organized by Mr. Frank M. Brown, the president of the railway company when I took charge as chief engineer. The boats were bought and

shipped to the river. These boats were entirely unfit for the work to be done, and at once in Cataract Canyon our troubles began.

### FIRST EXPEDITION.

We had lost much of our store of provisions by the upsetting of our boats while running the rapids—boats that were too light and too frail to stand the rough usage of such waters. It was necessary to go on short rations. On June 15 another accident had sunk to the bottom of the river all of our provisions except a sack and a half of flour, a little coffee, sugar and condensed milk. The flour was immediately baked into bread without either salt or yeast, and the food divided equally among the men. The men became alarmed and nearly all wished to quit. Feeling sure that we could carry on the work to Dandy Crossing with what food we had, I determined not to leave without an effort to complete the survey. Four of my men volunteered to remain. Six days we toiled on with a small piece of bread, a little coffee and milk for our morning and evening meal, and three lumps of sugar and as much river water as we wished at noon, until we met one of our boats with some of the men who had left, bringing us provisions. Our trip through Glen Canyon as far as Lee's Ferry was but a pleasant summer outing. Below Lee's Ferry, Ariz., are the Marble and the Grand canyons—together, and in reality one canyon nearly 300 miles in length.

### A DISASTROUS ENTERPRISE.

On the morning of July 9 we started with a little party of eight and three boats, into the wondrous depths of the "Great Unknown." The first day's run was made without danger, with two heavy portages around the rapids at Badger and Soap creeks, and we camped that night at the foot of Soap Creek rapid. After breakfast we were again on the river in very swift water. President Brown's boat with himself and McDonald was ahead. In two minutes we were at the next rapid. Just as my boat dashed into the head of it I saw McDonald running up the bank waving both arms. We had, for a few moments, all we could do to manage our own boat. It was but a moment. We were through the rapid, and turning out into the eddy I heard McDonald shout, "Mr. Brown is in there." I looked to the right but saw nothing. My boat turning to the left dashed through the whirlpool as the notebook, which Mr. Brown always carried, shot to the surface of the water and we picked it up as we passed.

Brown's boat was but a half minute ahead of mine, but in turning out into the eddy an upshooting wave between the main current and the whirlpool upset it without a moment's warning. Brown was thrown into the whirlpool, while McDonald was thrown into the current. McDonald, with great effort, reached the left bank some distance below, but Brown in that awful whirlpool swimming round and round, unable to escape, battled for his life till exhausted in the fight he sank, a hero and a martyr to what some day will be a successful cause.

### OBLIGED TO GIVE UP.

We had work to do and I determined, if possible, to complete the whole of that work. With this intention we started out next morning and for three days pushed on, shooting through or portaging round twenty-four bad rapids, getting deeper and deeper between the marble walls.

After a quiet rest on Sunday, Monday found us at the head of two very rough and rocky rapids. We portaged both of them. The boats had then to go through the lower end of the second rapid. The first boat got down with difficulty, as the current beat hard against the left cliff. My boat was next to start. I pushed it out from shore myself with a cheerful word to the men, Hansbrough and Richards. It was the last they ever heard. The current drove them against the cliff under an overhanging shelf. In trying to push away from the cliff the boat was upset. Hansbrough was never seen to rise. Richards, a powerful man, swam some distance down stream. The first boat started out to the rescue, but he sank before it reached him. Two more faithful and good men gone! Astonished and crushed by their loss, our force too small to portage our boats and our boats entirely unfit for such work, I decided to abandon the trip, with then and there a determination, as soon as new outfit could be secured, to return and complete our journey to the Gulf.

### THE SECOND EXPEDITION.

Omitting all the work of preparing our second expedition, it is sufficient to say we returned to the river and started from the mouth of Crescent Creek, just above Dandy Crossing, December 10, 1889, with an outfit of three splendid boats and twelve men. I had provided the best cork life preservers for all the men and they were required to



Photo, W. W. Bass.

A STRETCH OF CALM WATER, THE COLORADO RIVER.

wear them whenever they were upon the water. As it proved, these life preservers saved the life of my assistant engineer, Mr. John Hislop, and my own life as well.

We passed through the Glen Canyon a second time; ate our Christmas dinner at Lee's Ferry, and on December 28 started again into Marble Canyon. This canyon seemed destined to give us trouble. On January 1 our photographer, Mr. Nims, fell from a bench of the cliff, breaking one of his legs and receiving a severe jar. Space will not permit of telling the difficulties and dangers of carrying the wounded man up and out a side canyon, a vertical height of 1,700 feet, and forty miles back to Lee's Ferry, from where later on he returned to Denver.

With much toil and danger to life and limb we reached the end of Marble Canyon, at the mouth of the Little Colorado, on January 20 and slept that night in the Grand Canyon.

It is impossible in a few pages to do justice, in the smallest degree, to the great gorge itself—"that sublimest thing on earth"—or to the perils and adventures of our journey through it. What then shall we write?

### WINTER IN THE GRAND CANYON.

It has been the fortune of but few to travel along the bottom of the great chasm for a whole winter, while around you bloom the sweet wild flowers, and southern birds sing on almost every bush—and at the same time far above, among the upper cliffs, rage and roar like demons in the air the grandest and most terrific storms of wind and snow and sleet that I have ever witnessed, even above the clouds among the summit peaks of the Rocky Mountains.

To be imprisoned between the great towering walls, the whole upper country covered with its winter mantle of inhospitable snow, which hanging down hundreds of feet over the rim and in the side gorges gives warning that the only way to escape is over the hundreds of fearful rapids, falls and cataracts below, and through the only open gate at the extreme western end; to dash into and over the huge waves at the head of more than a hundred rapids with no knowledge that we would come out alive at the lower end; to toil, to rest, to eat, to sleep for weeks, and for months beside the everlasting roar of that raging torrent,—was an experience that even now brings up memories, feelings and impressions that would require volumes to relate.

### SHOOTING THE RAPIDS.

On our second expedition, with our new boats, we ran nearly all of the rapids and portaged but few; over many of them our boats dashed and jumped at the rate of fifteen to thirty miles per hour. To stand in the bow of one of these boats as she dashes through a great rapid with first the bow and then the stern jumping into the air is an excitement the fascination of which can only be understood through experience.

Starting into the head of one rapid the speed given to the boat by the oarsmen to gain steerageway carried us over the first and second smooth waves so fast that as the boat rose to the top of the last it had not time to turn down, but went on, up and up, and shot clean out into the air, jumping over to and dropping with a tremendous crash upon the third wave. Again, while going over another fall our boat, after passing the crest of the second wave and turning down, did not rise upon the third wave at all but dove clearly under it, filling completely with water, but thanks to its ten air-tight compartments it in an instant rose to the surface and went safely through the whole rapid.

**A TRIBUTE TO HISLOP.**

Besides the rocks, the great dangers in running these rapids are the immense whirlpools and eddies on their sides. To miss the channel in the least and turn the bow of the boat into one or either of these means such a sudden checking of the bow that the stern is whipped round like a shot. It was the bad luck of my assistant engineer, John Hislop, to be thus whipped off his seat while steering my boat and be dashed some fifteen feet away and dropped among the largest waves. His cork jacket kept him afloat, and overtaking him, he climbed into the boat again before we reached the end of the rapid. And just here let me pay a tribute of respect to that noble man. A true friend, a noble gentleman, a gallant knight. God bless his memory, for I loved him!

It seems the irony of fate that John Hislop, having passed through the perils and hardships of all these great canyons, having braved the rigors of three almost Arctic winters in the Klondyke, and as first assistant chief engineer having to his credit the building of the White Pass & Yukon Railroad, should be crushed to death beneath the wheels of a suburban train in the city of Chicago while on his bridal trip.

**AN EXCITING RIDE.**

Just below Kanab Wash, in the very heart of the Grand Canyon, we enjoyed what proved to be the wildest ride we had upon the river—the canyon so narrow, the turns quick and sharp, the current rushing, first one side and then on the other, forming whirlpools, eddies and chutes (for the river by a sudden flood had risen some twelve feet).



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ONE VIEW FROM ROWE'S POINT.

Our boats caught first in one and then in the other; now spun round like leaves in the wind, then shot far to the right or left almost against the wall; now caught in a mighty roll, and first carried to the top of the great waves and then dropped into the trough of the sea with a force almost sufficient to take away one's breath. Many times we narrowly escaped being carried over the rapids before we could examine them, making exciting landings by pulling close to shore, with bow up stream, rowing hard to partially check our speed, while one man jumped with a line to a ledge of rocks and held on for his life, and ours, too. At last we round a sharp turn and see a roaring, foaming rapid below, and as we come in full view of it we are caught in the mighty roll of flood waves. We try to pull out to an eddy—it is all in vain; we cannot cross such a current. We must go down over the rapid without examining it. When we find we cannot stop, with great effort we straighten the boats round and enter in good shape, bow on. It lasts but a moment; the cross current strikes us and we go broadside over the worst part of the rapid. Crouched down in the bottom, it is as much as we can do to keep from being tossed out as the boats roll from wave to wave. They are entirely unmanageable, and as we strike the whirlpools below we are spun round like tops some fifty times or more, till finally, at the end of the rapid, our little boats float into an eddy as quietly and gracefully as swans.

Some days later, on March 1, 1890, we reached the mouth of Diamond Creek.



**BASS FERRY, FOOT OF MYSTIC SPRING TRAIL.**

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## THE BEAUTY OF THE GREAT GORGE.

Even in the most dangerous parts of the canyon, between the most powerful rapids, are stretches of perfectly calm water, especially at the low-water season. After the exciting dash through the rapids it was a relief to our nerves to rest on our oars and float slowly along. It was then that we had the time to study those awe-inspiring scenes of grandeur and beauty that can be seen nowhere else upon the face of the globe.

After passing the awful grandeur of the upper granite gorge and that enchanting spot, the mouth of the Bright Angel Creek, the canyon grows more beautiful and picturesque. The granite has lost its awful and threatening look and slopes back in beautiful hillsides of variegated black, gray and green.

At the side canyons and from the bends of the river the upper portions of the whole gorge are brought into view, showing the great marble and sandstone cliffs benched back far away from the river. Mountains jut in close between the side canyons and washes nearly a mile and a quarter in height and by a delusion, most startling in its effect, seem to be hanging over our very heads. As we peacefully sail along the smooth stretches between the rapids each turn brings some wonderful picture more beautiful than the last.

Look yonder down the river or up that side canyon with the placid waters, between its polished walls of black for a foreground, and see there rise above the dark sandstone shelf that caps the granite gorge tier upon tier, bench upon bench, stepping back farther and farther and higher and higher, and in their immensity of height and proportion seeming to tower almost over our heads.

But look again! Those terrifying, frowning walls *are moving, are changing!* A new light is not only creeping over them, but is coming out from their very shadows. See those flattened slopes above the dark sandstone on top the granite; even at this very moment they are *being colored* in gorgeous stripes of horizontal layers of yellow, brown, white, green and purple.

What means this wondrous change? Wherein lies this secret of the great canyon?

## IT IS A LIVING SPIRIT.

After living in it and with it for so many weeks and months I lost all thought of the great chasm as being only a huge rock mass, carved into its many intricate forms by ages of erosion. It became to me, what it has ever since remained and what it really is—a living, moving, sentient being!

The Grand Canyon is not a solitude. It is a living, moving, pulsating being, ever changing in form and color, pinnacles and towers springing into being out of unseen depths. From dark shades of brown and black, scarlet flames suddenly flash out and then die away into stretches of orange and purple. How can such a shifting, animated glory be called "a thing?" It is a being, and among its upper battlements, its temples, its amphitheatres, its cathedral spires, its arches and its domes, and in the deeper recesses of its inner gorge its spirit, its soul, the very spirit of the living God himself lives and moves and has its being.

Come with me toward eventide and sit on yon graven pinnacle, look across the chasm to yonder wall, facing to the southwest. It extends for miles and miles in one unbroken, uncarved, uncolored, uninteresting sheer precipice, dividing the glory and beauty of the middle gorge from the unseen mysteries of the plateaus above.

But stop! What is that dark object moving along the face of the wall? And beyond



another, another, and still another far beyond. What is that scarlet point coming out through the hazy sheen and touched by one ray of the setting sun? Wait but a moment and the whole glory of the creation will be revealed to you.

Look now! Where is that long sheer forbidding wall? The dark shadows have pushed back through its face and opened up great caverns and side gorges a mile in width and half as deep. And what remains of the wall itself is carved in most intricate and wondrous forms of arches, alcoves, buttresses and towers. And before it where but an hour ago was only a misty haze now stand temples, domes, monuments and spires, grander and more sublime than ever the mind of man could conceive, and clothed in most gorgeous tints by the rays of the setting sun. For you and for me then this creation is still going on, as it has been in reality for ages in the past.

### BELOW DIAMOND CREEK.

Our expedition left Diamond Creek March 12 and completed the remaining fifty-three miles of the canyon on March 17.

In this last section are some of the worst and most powerful rapids, number 465 being perhaps the worst on the whole river. It is composed of three falls, in all, a drop of thirty feet. The current turned from one side by large bowlders, dashes, after passing over the first fall, against the left cliff, just at the head of the second fall, and is thrown back with awful force, and as it meets the current from the right curls in angry waves fifteen to twenty feet high, first from one side and then from another. From this the whole current is thrown against the right wall as it curves out into the stream just at the head of the third fall. (This is the rapid at which Major Powell's three men left him.)

It took but a few moments of examination to see that there was no way to get our boats or supplies around this rapid. It must be run. There was no hesitation. Every man went back to the boats and jumped in. They were soon ready for the plunge.

In a moment we were at the head of the first fall and over or through a half dozen huge waves and approaching the second fall. As I looked down into that pit of fury I wondered if it were possible for our boats to go through it and come out whole. I had no time for a second thought. We were in the midst of the breakers. They lashed at first one side and then the other, breaking far above our heads and half filled our boat. For a second we were blinded by the dashing muddy water. In another second we were through and out and right side up. I turned to see if the men were safe. They were all in their places; but our boats, though right side up, had been turned quartering with the current, and we were being carried with fearful force toward the right cliff. Every instant I expected to be dashed against the cliff ahead, where the whole current of water was piled up in one boiling mass against the solid granite; but just as I felt the last moment had come, our sturdy Scotch helmsman, Hislop, gave the boat a sudden turn, and assisted by the rebounding waves we went by the cliff and I shouted to the men: "That's good! That's good! We are passed." But the words were hardly out of my mouth when as we rounded the point of the third fall our boat, picked up bodily by a powerful side wave, was dashed fully ten feet to the right, and it crashed into a rock which projected from the shore, and stopped. We were all thrown forward. The boat filled with water, sank upon the rock and stuck fast. Wave after wave in quick succession rolled over us. I tried to straighten myself up, when a great wave struck me in the back and I was driven clean out of the boat into the whirlpool below the rocks. The force of the blow knocked me

insensible for a moment. But as I was drawn down the water closed around my head and my consciousness returned, and as I was carried by that whirlpool down, down, down, I wondered if I should ever reach the bottom of the river. The time seemed an age. The river seemed bottomless. In a few moments I was caught as by two forces—one around my legs and another around my back—and twisting in opposite directions, they sent me whirling away and I was shot to the surface some fifty feet down the rapids from where I went in. I caught my breath just in time to be carried under the next great wave, coming out again in a lighter wave at the lower end of the rapids. Thanks to my cork jacket I floated high above the water, but was carried along the swiftest part of the current for near a half mile.

The next boat fared better than ours. She soon overtook me and two of the men pulled me into the second boat almost as mercilessly as I was dashed from the first.

Finally we reached the Gulf of California, and returning overland to Yuma the expedition was disbanded April 30, 1890.

Before we part let us take one last look at the beauty and the grandeur we may never see again.

### THE DRAMA OF THE DAWN.

If but one visit can be made to the Grand Canyon, there is only one position and one time when any real understanding of its gorgeous beauty and the startling changes of its spirit life can be acquired.

The time is from an hour before daylight to perhaps two or three hours after sunrise.



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THE RIVER FROM GRAND SCENIC DIVIDE.

The position a templed butte somewhere about 4,000 feet above the river. Come with me then to such a spot.

It is early in the month of February. For months we had been at the bottom of the great gorge, with the towering, flaming walls above, and although among flowers and green grass in the valley, had looked for weeks upon the huge banks of drifted snow that fell over the rim rock. We had determined to climb the great north wall—reach, if possible, the level of the snow and look down upon the chasm from above. Toward evening we reached a place 4,000 feet above our camp on the river. It is growing late and we prepare for the night—a huge pile of dry cedar, a crackling fire, some dry biscuit and toasted bacon and warm blankets, but not a drop of water for thirty hours.

Long before the morning comes our sleep is ended. I sit by the edge of the marble precipice, with my back to the fire, and look out upon the darkness of the night. The whole great chasm is hushed in slumber, except for a half-hidden tremor and a sighing breath that passes by as if the great being were troubled in his dreams. The mighty river, shut in by the blackness of the deep, seems resting from its everlasting toil.

The flash from our fire lights up in ghastly red the sandstone wall above us, while the many caverns, hundreds and thousands of feet below, lie like huge monsters resting at the base of the cliff, the ugly blackness of their fantastic forms but faintly shown by the dim light of the morning stars.

Soon far out in the east, over among the towers and cloistered peaks and cloistered buttes around Shiva's Temple, break the first faint rays of the coming day. Slowly the whole eastern sky is lit up with a strange and curious light—not the gray of an Atlantic dawn, but a pale blue that seems to mellow the rays of the rising sun as they flash through the gray and yellow openings between the upper towers, turrets and cathedral spires of this land of wonder and amazement. Yonder, lower down through that sand gorge, the sun has crept—crept so noiselessly, yet so suddenly, that one is startled at the wondrous change. The farther side of the canyon is all aglow. The scarlet sandstone and dark red marbles flash back the rosy light which, mingling with the hazy blue of the atmosphere, casts over the whole landscape a glamour that is known nowhere else.

Far to the north the great Kaibab Plateau, covered with pure white snow and fringed on its edge with bright green of the stately pines, is sparkling in the morning sun, as if covered with a diadem of myriads of clearest diamonds and decked with thousands of perfect emerald plumes. To the south and west the vision is bounded by the same high plateaus that lie north and south of the river. The whole landscape is a network of caverns, gorges and ravines, and between them are towns, temples and buttes of every form, dimension and design.

As the sun rises over the surrounding platform what a silent, curious change creeps over the whole scene! The clear light of the sun streams through every opening. The eastern walls of the temple buttes burn with almost living flame, and to the west are cast long shadows so dark and so bold that it seems as if portions of the night itself had been left behind.

The whole lower canyon is still in solemn repose, but as the sun's light forces itself down the dark shadows steal away to hide themselves. At last the inner gorge wakes from the night of slumber, and as shadow chases shadow and the bright sunlight leaps first here and then there, now around a buttressed point, then into an alcove deep, the whole scene is a moving panorama of light and shade mingled with celestial beauty.

It is bewildering. The purplish blue of the atmosphere, though of not such a sleepy haze as in the summer time, gradually turns into a stately gray as the sun rises higher and higher, and the sharp lines of the cliff that stood out so boldly at first are blended in one indescribable mass of weird symmetry.

Behold! Across the canyon to the southwest, where the sun now shines in all his glory, noble amphitheaters are opening up their many colored galleries to view. "Hundreds of these mighty structures, miles in length and thousands of feet in height, rear their majestic forms out of the abyss, displaying their richly molded plinths and friezes, thrusting out their gables, wing walls, buttresses and pilasters, and recessed with alcoves and panels." The architecture so grand, so bold, so wild, and yet grouped together with such symmetry; and over all the outer and inner walls hung with so much grace those parti-colored draperies, in such varied tints, is yet in such blended harmony that none save He who first made and painted the lily and the rose could have been the artist or the architect.

A morning on such a sculptured butte in the presence of such awful grandeur, while slowly and noiselessly the darkness of night is changed into the beauty and solemnity of perfect day, is like standing on some new Mount of Transfiguration, where language fails and description becomes impossible.



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BISSELL POINT AND COLORADO RIVER.

# ITS INEFFABLE BEAUTY.

BY HARRIET MONROE.



HARRIET MONROE.

Miss Monroe is a resident of Chicago. She is a well-known poet, essayist and journalist. Her writings are published in the leading magazines of the country to the delight of many lovers of good literature. Of compiled works the most notable are "Valeria and Other Poems," "The Columbian Ode" and "John Wellborn Root—A Memoir."

Miss Monroe visited the Grand Canyon in May, 1899. It was a new and memorable experience. The telling of it reveals to us a nature singularly responsive to the varied moods of this titan of chasms. Her description is a rhapsody of the poetic, physical and spiritual attributes of the Grand Canyon.

Miss Monroe's finest interpretation of the canyon appeared in the *Atlantic Monthly* for December, 1899. When asked to contribute an article for this book she sent, through the courtesy of Houghton, Mifflin & Co., the following extracts therefrom:

## OUT IN THE OPEN.

The earth grew bold with longing  
And called the high gods down;  
Yea, though ye dwell in heaven and hell,  
I challenge their renown,  
Abodes as fair I build ye  
As heaven's rich courts of pearl,  
And chasms dire where floods like fire  
Ravage and roar and whirl.

Come, for my soul is weary  
Of time and death and change;  
Eternity doth summon me—  
With mightier worlds I range.  
Come, for my vision's glory  
Awaits your songs and wings;  
Here on my breast I bid ye rest  
From starry wanderings.



We were out in the open endless desert, the sunburned desolate waste. Our four horses kicked up the dust of the road and the wind whirled it into our faces and sifted it through our clothes. \* \* \*

All the morning we had drifted through forests of tall pines and bare white aspens, watching the changing curves of San Francisco Peaks, whose lofty summits rose streaked with white against the blue, until at last as we rounded its foothills the desert lay below us like a sea, and we descended to the magic shore and took passage over the billows of silver and amethyst that foamed and waved beyond and afar. \* \* \*

The immense and endless desolation seemed to efface us from the earth. What right had we there on those lofty lands which never since the beginning of time had offered sustenance to man? \* \* \*

We had left the nineteenth century behind; we were exploring the wilderness with the pioneers. We were unaware of the road, of the goal; we were pushing out into the unknown, buffeted by its denials, threatened by its wars, lured by its mysteries. The desert lay behind us now; once more the quiet forest for miles on miles. So still and sweet and sylvan were its smooth brown slopes; the tallest pines whose vision overtopped their neighbors were all unsuspecting of nature's appalling and magnificent intention. And we, we could not believe that the forest would not go on forever, even when vistas

of purple began to open through the trees, even when the log-cabin hotel welcomed us to our goal.

It was like sudden death—our passing round the corner to the other side of that primitive inn; for in a moment we stood at the end of the world, at the brink of the kingdoms of peace and pain. The gorgeous purples of sunset fell into darkness and rose into light over mansions colossal beyond the needs of our puny unwinged race. Terrific abysses yawned and darkened; magical heights glowed with iridescent fire. The earth lay stricken to the heart, her masks and draperies torn away, confessing her eternal passion to the absolving sun. And even as we watched and hearkened, the pitiful night lent deep shadows to cover her majesty and hide its awful secrets from the curious stars.

#### A NEARER VIEW.

In the morning when I went out to verify the vision, to compass earth's revelation of her soul, the sun fell to the very heart of the mystery, even from the depths rose a thrill of joy. It was morning; I had slept and eaten; the fatigue and dust of the long journey no longer oppressed me; my courage rose to meet the greatness of the world. The benevolent landlady told of a trail which led to Point Lookout a mile and a half away, beneath whose cliffs the old deserted inn lay in a hollow. \* \* \*

So I followed along the quiet sylvan path, which led up and down little ravines and dales, always under the shade of tall pines, always over the brown carpet of their needles. \* \* \* I passed the little silent lodge, with rough-hewn seats under the broad eaves of its porch, its doors hospitably unlatched, its rooms still rudely furnished; but all dusty, voiceless, forsaken. I climbed the steep slope to the rocks, crawled half prostrate to the barest and highest, and lay there on the edge of the void, the only living thing in some unvisited world.

For surely it was not our world, this stupendous adorable vision. Not for human needs was it fashioned, but for the abode of gods. It made a coward of me; I shrank and shut my eyes and felt crushed and beaten under the intolerable burden of the flesh. For humanity intruded here; in these warm and glowing purple spaces disembodied spirits must range and soar, souls purged and purified and infinitely daring. I felt keenly sure of mighty presences among the edifices vast in scope and perfect in design that rose from the first foundations of the earth to the lofty level of my jagged rock. Prophets and poets had wandered here before they were born to tell their mighty tales—Isaiah and Æschylus and Dante, the giants who dared the utmost. Here at last the souls of great architects must find their dreams fulfilled; must recognize the primal inspiration which, after long ages, had achieved Assyrian palaces, the temples and pyramids of Egypt, the fortresses and towered cathedrals of mediæval Europe. For the inscrutable Prince of builders had reared these imperishable monuments, evenly terraced upward from the remote abyss, had so cunningly planned them that mortal foot could never climb and enter to disturb the everlasting hush. Of all richest elements they were fashioned—jasper and chalcedony, topaz, beryl and amethyst, fire-hearted opal and pearl; for they caught and held the most delicate colors of a dream and flashed full recognition to the sun. Never on earth could such glory be unveiled—not on level spaces of sea, not on the cold bare peaks of mountains. This was not earth; for was not heaven itself across there, rising above yonder alabaster marge in opalescent ranks for the principalities and powers? This was not earth—I intruded here. Everywhere the proof of my unfitness abased and dazed my



BRIGHT ANGEL CREEK AND NORTH WALL OF CANYON FROM NEAR RAILWAY TERMINUS.

Copyright, 1898, by H. G. Prebody.

will: this vast unviolated silence, as void of life and death as some new-born world; this mystery of omnipotence revealed, laid bare, but incomprehensible to my weak imagining; this inaccessible remoteness of depths and heights, from the sinuous river which showed afar one or two tawny crescents curving out of impenetrable shadows, to the mighty temple of Vishnu which gilded its vast tower loftily in the sun. Not for me, not for human souls, not for any form of earthly life was the secret of this unveiling. Who that breathed could compass it?

### THE BIRD SONG.

The strain of existence became too tense against these infinities of beauty and terror. My narrow ledge of rock was a prison. I fought against the desperate temptation to fling myself down into that soft abyss, and thus redeem the affront which the eager beating of my heart offered to its inviolable solitude. Death itself would not be too rash an apology for my invasion—death in those happy spaces, pillowed on purple immensities of air. So keen was the impulse, so slight at that moment became the fleshly tie, that I might almost have yielded but for a sudden word in my ear—the trill of an oriole from the pine close above me. The brave little song was a message personal and intimate, a miracle of sympathy or prophecy. And I cast myself on that tiny speck of life as on the heart of a friend—a friend who would save me from intolerable loneliness, from utter extinction and despair. He seemed to welcome me to the infinite; to bid me go forth and range therein, and know the lords of heaven and earth who there had drunk the deep waters and taken the measure of their souls. I made him the confidant of my unworthiness; asked him for the secret, since, being winged, he was at home even here. He gave me healing and solace; restored me to the gentle amenities of our little world; enabled me to retreat through the woods as I came, instead of taking the swift dramatic road to liberty. \* \*

### LIKE NOTHING ELSE IN THE WORLD.

As I grew familiar with the vision I could not quite explain its stupendous quality. From mountain tops one looks across greater distances and sees range after range lifting snowy peaks into the blue. The ocean reaches out into boundless space, and the ebb and flow of its waters have the beauty of rhythmic motion and exquisitely varied color. And in the rush of mighty cataracts are power and splendor and majestic peace. Yet for grandeur appalling and unearthly; for ineffable, impossible beauty, the canyon transcends all these. It is as though to the glory of nature were added the glory of art; as though, to achieve her utmost, the proud young world had commanded architecture to build for her and color to grace the building. The irregular masses of mountains, cast up out of the molten earth in some primeval war of elements, bear no relation to these prodigious symmetrical edifices mounted on abysmal terraces and grouped into spacious harmonies which give form to one's dreams of heaven. The sweetness of green does not last forever, but these mightily varied purples are eternal. All that grows and moves must perish, while these silent immensities endure. Lovely and majestic beyond the cunning of human thought, the mighty monuments rise to the sun as lightly as clouds that pass. And forever glorious and forever immutable, they must rebuke man's pride with a vision of ultimate beauty and fulfill earth's dream of rest after her work is done.



# A NEW WONDER OF THE WORLD.

BY JOAQUIN MILLER.



JOAQUIN MILLER.

In the *Overland Monthly*, March, 1901, Joaquin Miller writes of his visit to the canyon of canyons. By permission of the publishers a portion of that article is reproduced below. It is the noted poet's latest word concerning earth's greatest tragedy.

Those who have read the "Songs of the Sierras" or have heard Joaquin Miller tell of his adventures in the Rockies, need not be reminded of his undying love for the great out-of-doors country beyond the Missouri. In it he has wandered so long that it is a part of his very life. From such a man the testimony that this is the "grandest work of God," is more than a chance utterance; it is the deliberate conviction of one who feels the spirit back of Nature, and who having seen the vision, is impelled to put it in words of fire.

## THE WORLD'S PAINT SHOP.

**I**T is old, old, this Grand Canyon, and yet so new it seems almost to smell of paint—red paint, pink, scarlet. Left and right, up and down, more than half a mile deep in the earth, every shade and hue of red, as far as eye can compass. It is a scene of death-like silence, a dead land of red, a burning world. We have Arroyo Grande in California, the Yosemite Canyon also. Idaho, Washington, Montana, New Mexico, Utah, each and all have their grand canyon, yet there is only one Grand Canyon on the globe, Cañon Grande de Colorado, the burning hues of which gave name to a great river and, centuries later, to a great state.

It is written that the Spanish cavalier and explorer, in quest of the seven cities of gold, pushed the prow of his boat so far into the waters of this fearful chasm of colors that on looking up at midday he could see the stars; and it is written that overcome with religious awe, fearing perhaps that he was daring to approach the gates of Paradise before his time, he raised the cross, bared his head, gave this color world its name and drew back and away, to come again no more. But still the tradition was that at least one of the cities of gold lay within and under the protection of these fearful walls of flaming red. \* \* \*

## A SABRE THRUST IN EARTH'S BOSOM.

This canyon, or sabre thrust in the rich red bosom of Mother Earth, is 217 miles long and more than 5,000 feet deep. It is very tortuous and of almost uniform splendor—glory, terror, as you please to term it. A National Reserve, sixty by sixty miles, covers the major part of its magnificence.

We approached the precipitous red sides from the south, where the narrow granite gorge of the smaller river is more narrow, yet almost as deep, and is comparatively colorless, as I remember it. Yet the absence of sunlight in its fearful and narrow depths may have much to do with the absence of color. We were fortunate enough to find a storm raging at sudden intervals at our feet, in the greater canyon, fifteen miles wide, perhaps, and more than half a mile deep. The interrupted battles of the elements roared far below us, and all the time, as far as eye could reach, the white clouds curled, drifted, drooped, died, then rose again. \* \* \*

The thunder at intervals was fearfully impressive. We felt at one time that the temples, towers and battlements of red which burst here and there above the thunder clouds must be crumbled to dust, so terrible was the tumult. The lightning almost continually wrote the autograph of God on and through the clouds at our feet. But when the clouds would part and pass for a time and stillness and sunlight come again, all would be as before.

### RAINBOW EFFECTS.

Here, at a dozen times that day and for the first time in my life, I saw a rainbow in a circle, a complete and perfect circle. Years later I saw the phenomenon in the Hawaiian Islands, where I was told it counted nothing so very strange. On inquiry here at the red lips of the Grand Canyon, in these early days of June, I find that the circular rainbow is no new thing. Indeed, dozens have been here with their cameras watching for a storm, in the hope of photographing this halo of the heavens. The nearest I have been able to get to this wonder is a few white clouds resting lazily in the red world below. Yet it is not all red here. The dim ruin of the remote side of the canyon is a perpendicular wall of about a thousand feet of cream-colored limestone. The Walls of Jerusalem, Gates of Gaza, Solomon's Temple—pick them out in the picture, if you please and where you please, and magnify them ten thousand times, and all in red. The tower of Solomon's Temple at sunset is red with the redness of blood. \* \* \*

### THE RIVER.

Looking down more than half a mile into this fifteen-by-two-hundred-and-eighteen-mile paint pot, I continually ask: Is any fifty miles of Mother Earth that I have known as fearful, or any part as fearful, as full of glory, as full of God? And one constantly questions how did it happen that earth opened right here in this inaccessible and savage land of savages, her wide red lips to tell of the marvels forever under our feet?

I think it came about in this way. There was an under or buried river. Take the Limestone River in the Mammoth Cave as a feeble illustration. You know the story was for centuries that the Colorado River flowed in part underground. We never knew certainly the truth or fiction of the Indian story that the river entirely disappeared in places, till the intrepid Lieutenant Powell, the first, and now that the matter is cleared up, let us hope that he may be the last to dare descend into this wonderful river. What divine audacity! The wonder is not that he lost half his force, but that he saved even himself to modestly tell the story!

The tradition of an underground river is no wonder at all, even though there never had been such a thing. For, standing almost where you will, on either side of the mighty miles of canyon, you will find places where the river as entirely and suddenly disappears, apparently, as if it were a train of cars passing into a tunnel. \* \* \*

### COLOR IS KING.

The one most startling yet most pleasant thing, as Grand Canyon bursts upon you, or rather as you burst upon it, and look down, is the sympathetic symmetry, let me say the homogeneity, of it all. Putting aside the soft, flesh-and-blood color, you cannot help a sudden and glowing heart-beat at the human fashioning of it all. Here is a photograph from what may be called Panorama Point. Here, there, almost everywhere, you see the

symmetry, the form, the fashioning, as perfect as a growing flower; and it takes no imagination at all to see the hand of man, the mind of man, here in this grandest work of God that I have yet seen under the path of the sun. And this is to say nothing of the color, which is almost as perfect as the color of the most highly and perfectly colored flower ever considered.

Bear in mind, as said before, that this strip of 218 miles of color and grandeur has no special points of view, as a rule. A thousand views would, perhaps, have nearly as many prominent points of view. Every famous temple, tower or place in history or song or story seems to have its counterpart here, only a thousand or ten thousand times magnified. Despite the deep bed of the river, the water is warm, the warm color of the Nile. Spending a night here, to get the soft moonlight, as if in some cathedral fashioned when "there were giants in the land," I found the silence fearful.

And now a pretty, little, pathetic fact, a touch of tenderness, humanity. All the red colors of the flower kind in Christendom, and there are many, seem to come here and look down from the dusty brink of the canyon, into this riotous yet most orderly world of red. The scarlet cactus, the Indian pink, the painter's brush, the red currant—indeed, about a dozen bits, dots and dashes of red that I cannot name, look down, away yonder, into that mighty arena of red, as if surely a part of it all; as one life may be a part of the Infinite.

Color is king here. Take the grandest, sublimest thing the world has ever seen, fashion it as if the master minds from the "beginning" had wrought here, paint it as only the masters of old could paint, and you have El Cañon Grande del Colorado!



DESCENDING WALLAPAI TRAIL INTO HAVASU CANYON.

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# THE GRAND CANYON AT NIGHT.

BY *HAMLIN GARLAND.*



HAMLIN GARLAND.

The author of "The Eagle's Heart," "Main Traveled Roads," "Rose of Dutcher's Cooly," and "Her Mountain Lover," has of late years made a special study of the Rocky Mountain region. His recent stories give evidence of a keen understanding of its scenic and racial types and a sympathetic appreciation of its picturesque beauty. Much of his future work will be in this virgin field.

Mr. Garland has visited Arizona and has seen the Grand Canyon. While there he not only saw the big chasm itself, but listened with attentive ear to Hance's marvelous stories. A charming study of Hance appears elsewhere herein.

The following account of the Grand Canyon, as seen at night, was written by Mr. Garland for these pages, and is his latest as well as most serious interpretation of the canyon's many moods:

## A TWILIGHT SCENE.

**T**O me the Grand Canyon possesses two distinct entities. It is at once a majestic rift in the earth and two ranges of mountains. As I look back upon it, two views of it dominate all others.

The first is from the bank of the turbulent river at twilight, where I sat alone watching the sun set over the western range, while a superb September moon rose solemnly over the peaks to the east. It is worth while to spend a night alone among these prodigious peaks and listen to the voice of the Colorado as it roars with ever-increasing power, like some imperious nocturnal animal—a dragon with a lion's throat. As the shadows deepen in the lower deeps, beginning to wash like the flood of a spectral purple sea the gray-green mesas of the lower levels, then the river's voice swells till it seems to fill the whole enormous canyon—savage, solemn and persistent.

It was deep night where I sat, while yet on the eastern peaks, a mile above my head, the sun's rays lay in hot red gold. It was instructive to me to see how, one by one, assertive lesser heights sank into shadow, till at last only one or two remained to wear crowns, their lonely grandeur no longer in dispute. And then the moon began to grow great, like the river's voice, pouring among the crags a mystical radiance. As I stood looking at the ragged edge of a cliff set against the great yellow brim, I became aware of something white and mysterious at my right hand; some strange, ghostly, awesome thing had crept upon me silently and was about to envelop me. For an instant my blood thickened with fear. Was it some ghost of the river's dark caverns? It seemed so close I had but to reach out my hand and feel its chill. Each moment it expanded, towering over me. The river seemed suddenly more fiercely menacing of roar, the darkness about my feet deeper, and mysterious rustlings arose in the mesquite. With an effort I whirled and fronted the mysterious presence. It was the face of a cliff across the river, smitten into white radiance and brought near by the marvelous light of the moon. The wall of rock was a half mile away and three thousand feet in height.

**ANOTHER PHASE.**

When I came out of the canyon, next day at noon, a sounding wind was blowing and the air had a touch of autumn bitterness in it. The whole vast chasm was roofed with masses of gray clouds ranked closely and hurrying swiftly. The gloom of their presence was magnificent. All the distracting lines of the canyon walls were lost; all tearing, torturing angles softened and made plastic. The haphazard coloring was unified and made harmonious by deep blue curtains of mist. Here, too, was a new phase of the canyon. I began to understand that it had a thousand differing moods, and that no one can know it for what it is who has not lived with it every day of the year. It is like a mountain range—a cloud to-day, a wall of marble to-morrow. When the light falls into it, harsh, direct and searching, it is great, but not beautiful. The lines are chaotic, disturbing—but wait! The clouds and the sunset, the moonrise and the storm will transform it into a splendor no mountain range can surpass. Peaks will shift and glow, walls darken, crags take fire, and gray-green mesas, dimly seen, take on the gleam of opalescent lakes of mountain water. The traveler who goes out to the edge and peers into the great abyss sees but one phase out of hundreds. If he is fortunate it may be one of its most beautiful combinations of color and shadow. But to know it, to feel its majesty, one should camp in the bottom and watch the sunset and the moonrise while the river marches from its lair like an angry lion.

**SAN FRANCISCO PEAKS, NEAR FLAGSTAFF.***Photo, G. L. Rose.*

# AS SEEN BY A LAYMAN.

BY EDWIN BURRITT SMITH.



EDWIN BURRITT SMITH.

Mr. Edwin Burritt Smith is a prominent Chicago lawyer. He is also a close student of public affairs and by tongue and pen has made many notable contributions to the cause of civic advancement.

On a hurried business trip to California he found time to stop and see the Grand Canyon, and now considers that too brief side tour the crowning feature of his trans-continental journey.

His impressions of a first visit to the Grand Canyon may be termed those of the average professional man who goes there perhaps slightly incredulous, to determine at first hand if the reports about the canyon have any foundation in fact, and who comes away under a spell which is never broken.

Here is Mr. Smith's report:

## FIRST IMPRESSIONS.

**T**HE Grand Canyon is a tremendous chasm, an all but bottomless world of wonders. It is the experience of a lifetime to gaze from its rim into the depths below, to ride down a trail into it, to sleep on the ground within its walls beneath a sky of marvelous clearness. The world can never seem quite the same after such an experience.

The first impression that comes to one who stands on the rim of earth's mightiest chasm after a long journey across the vast and weird tableland of northern Arizona, must ever remain his most glorious memory of natural scenery. The traveler, having journeyed many miles through a forest of pine and cedar, at last arrives at the brink of what at first seems to be the very edge of the world. If the point be a favorable one he has a glimpse of the Colorado river more than six thousand feet below rushing on its way to the Gulf of California. The first thought is of a vast channel of regular sides and awful depth, perhaps thrice as wide as deep. It is in fact about a mile and a quarter deep and some thirteen miles wide. It requires days of increasing familiarity obtained by excursions along its rim and into its depths to make one realize something of the magnificent distances of the Grand Canyon.

## COMPARED WITH YOSEMITE.

Many have stood at Glacier Point, the edge of a sheer granite precipice three-fifths of a mile high, and gazed with admiration into the Yosemite Valley below. Across the tremendous chasm to the right is the towering Half Dome; to the left is the most beautiful of waterfalls; in the foreground beyond the Merced River lies Mirror Lake. The floor of the valley supports a noble forest; its vertical sides are of solid gray granite. One standing at this point can scarcely conceive of a chasm more vast or grandly beautiful. Yet the Yosemite, as an arm of the Grand Canyon, would be but a rent in the side of the upper canyon scarcely noticeable from the opposite rim.

## ITS COLORS.

The majesty of the Grand Canyon is due to its vastness. Its glory lies in its color.

Above, and to the very edge of the rim, is a growth of evergreen trees. Below this fringe of green are vertical walls of sparkling white, blue, pink and red sandstone. These are the faces of solid strata, some of them hundreds of feet in thickness, through which the main or upper canyon is cut. The sloping taluses between the successive strata bear trees and bushes. The dry bottom of the upper canyon, some thirty-five hundred feet below the rim, supports a stunted growth of sage, yucca, cactus and other desert plants. Thus, mingling with the brilliant colors of the vertical rock faces, are the dull greens and grays of the taluses and bottom of the upper canyon. A cross section of the upper canyon, disregarding the mountains, is somewhat like the cross section of an Indian canoe with its nearly vertical sides and curved bottom. The entire effect, under a brilliant sun in a perfectly clear atmosphere, is gloriously beautiful. The changing effects as the sun rises and sets linger in the memory. Beautiful and constantly changing gradations of light and shadow, strangely blending with the brilliant colors of the canyon, recur at every morning and evening hour. As the sun rises above, or sinks below, the horizon the entranced observer gazes into what seems a bottomless pit filled with a marvelous mixture of colors, dark below and light above.

### THE RIVER GORGE.

Below the upper canyon, cut in its bottom in a line often as sharp and jagged as a lightning flash, is the river gorge in dark red granite. The gorge is so narrow and deep



THE OLD STAGE ROAD FROM FLAGSTAFF.

that the river is entirely invisible from most points on the rim of the canyon. The current of the river is so swift that from the brink of the gorge it looks in places like an irregular path of foam. Its constant roar is plainly heard by the awed observer from the rim of the gorge nearly two-fifths of a mile above.

### ITS MOUNTAINS.

Nowhere else have mountains so splendid a setting. Some of them are more or less detached projections from the sides. Others rise independently from the very edge of the river gorge. They differ greatly in altitude. Some of the larger ones reach the level of the rim and have all the strata of the sides of the canyon. The tops of many are of brilliant red sandstone. In material and color they of course correspond with the sides of the canyon. For this reason, when the sun is high and the great chasm is flooded with light, the unfamiliar observer may look down upon stupendous forms more than a mile high and scarcely notice their presence in the mighty channel. Under such a light the mountains of the canyon blend into the wall beyond, itself a mountain a mile and a half high and over 200 miles long. As the visitor becomes acquainted, he gradually notes details; the mountains stand out from the wall beyond; the walls themselves grow less regular in outline; the vastness and color of the canyon become the splendid setting of a world of wonders; its mighty spaces furnish a field for new discoveries every hour. As the sun sinks and the shadows deepen, especially when the canyon lies under the light of a perfect moon, the vast pyramidal forms below seem to be mighty fortresses hushed in sleep, or vast ruins left by a giant race.

### A FINAL WORD.

The Grand Canyon possesses a strange and awful fascination for those who have gazed into its mysterious depths. It has for every visitor the charm of a new discovery. All who see it once look forward to other visits. To the superstitious Indian the canyon is "Bad Medicine." To the white man it will ever be a glorious mystery. When all the earth has been explored, when the secrets of nature have been discovered, when the field of adventure has been narrowed to the utmost, the Grand Canyon will remain unspoiled by the touch of human hands, as awful in its unique grandeur as it is to-day.



HALF WAY DOWN, BRIGHT ANGEL TRAIL.



# THE CANYON BY DARK AND BY DAY.

BY C. S. GLEED.



CHARLES S. GLEED.

Mr. Charles S. Gleed resides in Topeka, the capital city of Kansas. While representing what is best and most aggressive in Western life, his many business interests have also brought him closely in touch with Eastern affairs, and he is as honored in New York as at home.

Mr. Gleed is a lawyer whose wise judgment is sought by several large corporations. He is a member of the board of directors of the Atchison, Topeka & Santa Fe Railway. He controls an influential newspaper at Kansas City. He writes timely articles for the magazines. He is an able public speaker and intimately knows a great number of the persons who make things come to pass—being himself a prominent member of that brotherhood.

The story of Mr. Gleed's first trip to the canyon is given below:

## THE STAGE—AND THE BLACK PIT.

**M**Y first arrival at the Grand Canyon of Arizona was at midnight. It was long ago and we went by stage—one of the worst stages that ever was. Many times we lost our way, and when night fell we had little hope of reaching the canyon until next day. But at midnight we blundered into camp and the consolations of supper and rest were soon ours.

At about one o'clock we crept out of the little valley of the camp and made our way silently, like scouts, toward the object of our desire. Above us the giant trees murmured at our invasion of the splendid solitude of the place. The moon, young and irresolute, a mere mark of parenthesis, peered timidly from between hurrying clouds, and the stars glimmered faintly as if disheartened. When the trees were quiet a deep-sea stillness prevailed. No life of any kind gave sign. Slowly we crept up the slope, then over a narrow bridge of rock, and at last, obedient to the guide, put forth our hands. We found an edge, a declivity, an absolute end. We clutched vainly at black space. To fathom this space we thrust over a big stone. No sound came back. The pit was bottomless—the grave of the world. Down in that empire of night we seemed to discern new seas and new continents of outer and utter darkness. The very soul of night welled up from the abyss. Tidal waves of shade surged from below and overwhelmed the pinnacle where we clung. A paralysis of surprise held us. Helplessness wound about us and the hypnotism of wonder took our faculties captive. The mystery fascinated, the void beckoned. We scarcely knew why we did not obey the summons—why we did not abandon the present and, by following the big stone, escape to the future.

## MORNING REVELATIONS.

The hour of light came on. In through the sweet pellucid air of that high place came the arrows of the Aztec sun. They pierced the heart of the valley of night and, miracle of miracles, a revolution and a revelation! Before us grew downward a wall of prodigious depth. Tier on tier of titanic masonry sprang into sight. Splendid colors spread like blushes. Every tint ever imagined came quivering, shimmering, flashing, as if the great

wall were a splendid tapestry waving in the sun. Away to the right and to the left came marching into view, like mighty armies, miles and miles of majestic scenery such as we had never before known. Clearer and clearer grew the outlines. Night was overcome, day had triumphed, and there at last we saw in all its splendor the Grand Canyon of Arizona.

Far away it stretches, showing at a single glance nearly a hundred miles of its length. Like the zigzag track of stupendous lightning it lies, an eternal furrow in the face of earth. At the bottom, down below all the carnival of quaint and majestic forms, down, down, where a thousand feet seem scarcely ten, runs the river—the Colorado—hardly known of men until it breaks away through the desert as the boiling, surging boundary between the territory of Arizona and the state of California. This river, this stream of solitude, fed by the eternal springs and the perpetual snows of the Rocky Range, fights its way for nearly three hundred miles through the pass, wrangling with mighty boulders and at war with unconquerable walls. When finally it emerges it is unmistakably sullen and resentful, as if it could neither forget nor forgive its cruel battles above.

#### AS THE IMAGINATION RUNS.

But the canyon! Surrendering our minds to the magic spell of that mighty chasm, what pictures troop before us! Yonder see Gibraltar, giant sentinel of the Mediterranean. There on long ledges are St. Peter's and St. Paul's, Niagara, the Pyramids and the tower of Pisa. Bracketed beyond are the great parliament houses of the world. Down below behold in life size the lesser mountains of our own land—Washington, Monadnock, Mansfield, Lookout and a thousand others. See in the distance million colored pictures of the Alps, the Adirondacks and the Sierras. On endless shelves, this way and that, behold the temples and cathedrals, the castles and fortresses of all time. See vast armies, the armies of the ages, winding up the slopes, and great navies maneuvering in the mirage-like distance. Here, indeed, the giant mind of Dante would have found new worlds to conquer; and Homer would have dreamed new dreams of gods and men, love and war, life and death, heaven and hell.

Outrun, overcome and weary, the mind of the watcher surrenders, and, while it waits, the moments lengthen to hours and the hours to days. Measures of time intrude and there is no fit ending for the reverie.

“Vastness! and Age! and memories of Eld!  
Silence! and Desolation! and dim Night!  
I feel ye now—I feel ye in your strength—  
Oh spells more sure than e'er Judæan King  
Taught in the Gardens of Gethsemane!  
Oh charms more potent than the rapt Chaldee  
Ever drew down from out the quiet stars.”

# THE GEOLOGY OF THE GRAND CANYON REGION.

BY PROF. R. D. SALISBURY.



PROF. R. D. SALISBURY.

Geology deals with facts about the earth's crust. It begins with the beginnings of time and in its computations a thousand years are as one day. Looked at from one viewpoint it might be accounted prosaic, eternally wedded to the ground. But it has wings. He who reads with unquickened pulse and with no stir of the imagination the epic accounts of earth's submersion, uplifting and erosion—each era comprising millions of years—should not visit the Grand Canyon. For him that open page of Nature's world-building processes would have no meaning or charm. But for him who wishes to build his vision on a solid ground of facts—who cares to know what story the rocks tell—the article which follows will be more interesting than a romance.

Professor Salisbury, the writer thereof, is connected with the University of Chicago as professor of geographic geology. He is a member of many prominent scientific societies, has written several books, is one of the editors of the *Journal of Geology*, is connected with the United States Geological Survey, and stands in the front rank of American geologists. The surface geology of New Jersey has been one of Professor Salisbury's special studies.

## GEOLOGY OF THE GRAND CANYON REGION.

**T**HE Grand River, taking its source in the Rocky Mountains of northern Colorado, and the Green River, which has its beginning in the Wind River Mountains of Wyoming, unite in southeastern Utah to form the Colorado River. From this point the Colorado flows first in a southwesterly and then in a westerly course through the plateau region of southeastern Utah and northern Arizona, in the most remarkable canyon of the world. From the mouth of the Little Colorado (Colorado Chiquito) in the central part of northern Arizona to the Grand Wash in the northwestern part of the territory this canyon, appropriately known as the Grand Canyon of Arizona, is somewhat more than 200 miles long, while its depth is often rather more than a mile. So far as present knowledge goes it is the greatest trench in the earth's crust. A scarcely less remarkable canyon—the Marble Canyon—though but one-third as long, lies above the head of the Grand Canyon.

## THE SURFACE OF THE PLATEAU.

The altitude of the plateau in which the canyon lies varies considerably, and the variation is greater north of the river than south of it. The larger part of the plateau is about 7,000 feet above the sea. Great as this elevation is, the plateau is bordered on the north by still higher lands, the High Plateaus of Utah, which rise some 4,000 feet above the general level of the surface about the canyon. To the west, the plateau of the canyon region falls off abruptly along the Grand Wash, near the 114th meridian, to a desert country beyond. To the south, it is terminated by a less marked and more irregular escarpment, falling off to the lower levels and more broken lands of central and southern Arizona. To the east, the limits are less well defined; for present purposes, however, the plateau of the Colorado may be considered as ending at the conspicuous

escarpment of the Echo Cliffs, east of the Marble Canyon. On the north and east, therefore, the plateau is bordered by still higher plateaus, while on the south and west it descends to lower lands.

That portion lying south of the canyon may be looked on as a unit. The part lying north of the river is divided into four subordinate sections, separated from one another by abrupt escarpments. Some of these escarpments mark the position of great vertical fissures extending thousands of feet down into the earth's crust, along which the rock strata have been displaced (Fig. 1) or faulted, while others represent great flexures (Fig. 2).

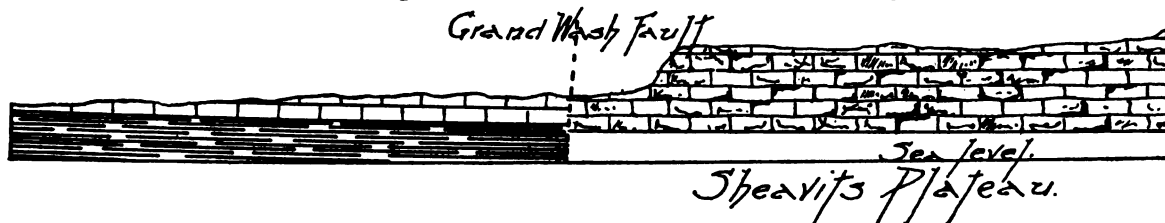


Fig. 1. The fault escarpment along the Grand Wash, at the western border of the Canyon plateau. (Taken from Dutton.)

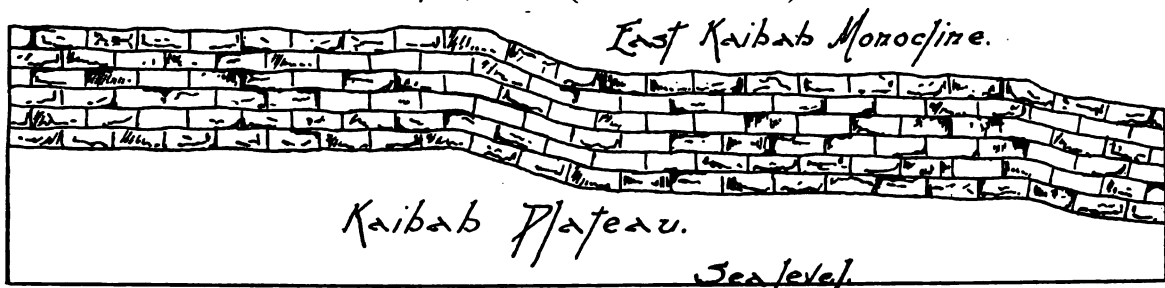


Fig. 2. A monoclinal escarpment in the plateau north of the river in the eastern part of the Grand Canyon region. (Taken from Dutton.)

Much of that part of the plateau lying south of the canyon is nearly flat, though the general level is interrupted here and there (1) by somewhat notable elevations, and (2) by equally notable valleys and gorges. Some of the elevations, like the San Francisco Mountain at Flagstaff, and Red Butte farther north, rise thousands of feet above the general level, and some of the depressions are thousands of feet below it.

## THE STRUCTURE OF THE PLATEAU.

The general structure of the plateau region is rather simple. To great depths it is made up primarily of nearly horizontal layers of rock of various sorts and colors lying one above another. This structure is best shown in the walls of the Grand Canyon, but it is also shown in most of the minor tributary canyons, where the absence of vegetation and soil expose the plan of the structure so plainly that its simpler elements may be grasped at a glance. Although the beds of rock appear to be horizontal, they are not absolutely so, but dip slightly to the north. Thus the beds which are about 7,800 feet above sea level at the base of the San Francisco Peaks are only 6,400 feet above sea level at the rim of the canyon forty-odd miles to the north, and 4,400 feet above the same datum plane at the Vermilion Cliffs, nearly an equal distance farther in the same direction.

There is a second element in the structure of the plateau which appears to best

advantage in the walls of the canyon. This is a series of nearly vertical fissures, by which the horizontal beds are broken up into a series of blocks. These vertical fissures run in various directions, but there are two principal sets, approximately at right angles to each other. It is the combination of horizontal lines occasioned by the bedding planes and of vertical lines occasioned by the fissures, that produces the remarkable architectural effects so common in the canyon. (See Plate I.)

### THE HISTORY OF THE PLATEAU.

The history of the plateau in which the Grand Canyon is cut has been a long one, but its principal elements are well understood. The Grand Canyon and all the minor canyons tributary to it were cut by running water. If they were filled, thus obliterating the work of the streams, the surface of the plateau between the railway and the canyon would be nearly flat except for the volcanic hills and mountains, and the few buttes of stratified rock which rise above the general level. This was the condition of the surface before the streams of *modern times* had sculptured it.

The buttes of stratified rock which dot the plateau are significant of certain phases of its history. These buttes are made up of isolated remnants of strata which once overlay the whole plateau. They are mute but unequivocal witnesses of the great erosion which has removed beds of rock, hundreds and thousands of feet in thickness, from the larger part of the surface of the region. The same thing is suggested by the escarpments to the north and east where higher and younger strata, corresponding with those of the buttes, overlie the beds which now constitute the surface of the plateau (Figs. 3 and 4). The present plateau surface therefore represents a surface of erosion cut down from a surface which was once far above it (Fig. 5).

The plateau in which the Grand Canyon of the Colorado is cut is a plain of erosion, or base-level plain, originally developed near sea level. Its present position, high above the sea, shows that it has been elevated several thousand feet, more than a mile indeed, since the time of its development, for base levels are developed only near sea level, and

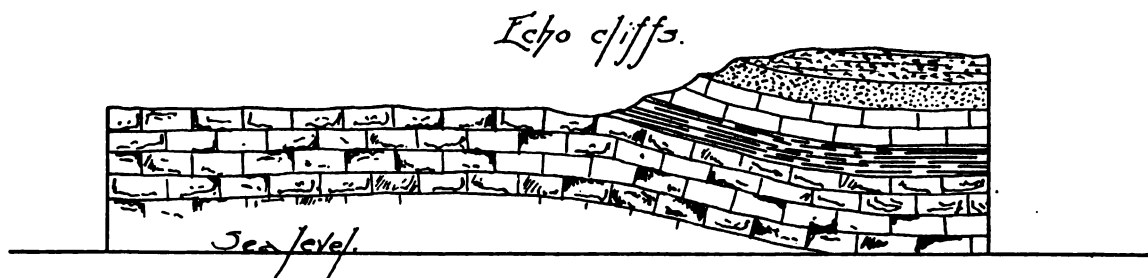


Fig. 3. The Echo Cliffs at the east border of the canyon plateau, showing that the strata to the east once extended west over the plateau of the canyon. (Taken from Dutton.)



Fig. 4. Section north from the canyon plateau, showing that the beds which outcrop in the cliffs to the north once extended south over some or all of the canyon plateau. (Taken from Dutton.)

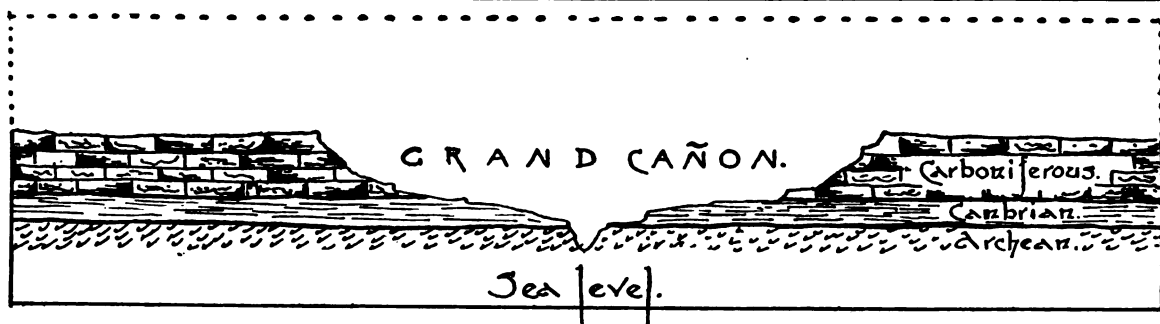


Fig. 5. Section across the Grand Canyon, showing its present relations in full lines, and suggesting, by the dotted line above, the thickness of rock which may have been removed.

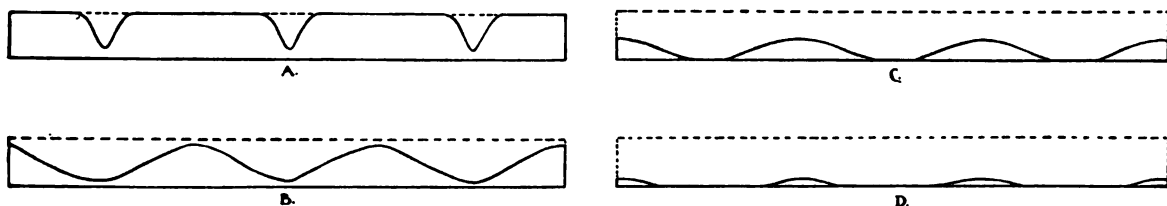


Fig. 6. A series of sections illustrating the base leveling of a plateau by the widening of the valleys.

this old base level is now more than a mile above the sea. Since its elevation, the rain and the rivers have cut the canyons and gorges which affect its surface.

The development of these flat surfaces (base levels of erosion) by rain, rivers and wind is an interesting study. Briefly, swift streams cut downward; when the velocity is slight, the downward cutting ceases, but the side cutting continues, and the widening of the valleys goes on until the intervening divides are worn away. (Fig. 6.) Both processes are still going on in the Grand Canyon.

From the buttes, and from the escarpments on the borders of the plateau (Figs. 3 and 4), some conception may be gained of the extent of the erosion involved in the development of the plain, which was later lifted up to the estate of a plateau. The plateau of the canyon passes into the High Plateaus of Utah by a series of terraces. North of the canyon, the first of these terraces rises abruptly several hundred feet above the plateau to the south. Following northward over the nearly level surface of the first terrace, a second escarpment several hundred feet in height is reached. Followed to the north, the level surface above this escarpment rises to higher altitudes, sometimes by distinct escarpments, and sometimes by more gradual slopes. These several escarpments represent the edges of formations younger than those of the plateau, some or all of which once extended southward over the whole region. The thickness of the formations which have been cut off from the surface of the plateau represents the amount of erosion which has been accomplished. If all the formations, the edges of which lie to the north and the east, once extended over the plateau, as seems likely (Dutton), it would appear that the thickness of the beds removed must be something like 10,000 feet, or approximately two miles. Were these strata put back the surface of the plateau would be built up to a height which is rivaled, among existing plateaus, only by the great plateau of Thibet. It is to be remembered, however, that the present plateau surface was developed near sea level as a low plain, and that it was not until a much later time that it was finally lifted

to its present position. The altitude of the plateau was, therefore, probably never so great as the above comparison seems to imply. The uplift which followed the development of the plain was probably not less than 6,000 feet. The aggregate uplift of the region in the course of its history was far greater than this, as will be seen in the sequel.

The area from which the thicknesses of rock mentioned in the last paragraph appear to have been removed is not less than 13,000 to 15,000 square miles. The length of time necessary for the removal of such thicknesses of strata from so great an area was very great. While there is no means of measuring it in years, its duration should probably be measured in terms of millions of years, rather than in terms of a lesser denomination.

### SUBDIVISIONS OF GEOLOGIC TIME.

Geologic time is classified by geologists as follows—the oldest division (1) standing at the bottom and the youngest at the top:

ERAS.	PERIODS.	ERAS.	PERIODS.
5. Cenozoic - - - - -	{ Pleistocene, Pliocene, Miocene, Oligocene, Eocene.	3. Paleozoic - - - - -	{ Permian, Carboniferous, Devonian, Silurian, Ordovician, Cambrian.
4. Mesozoic - - - - -	{ Cretaceous, Jurassic, Triassic.	2. Proterozoic - - - - -	{ Algonkian.
		1. Archeozoic - - - - -	{ Archean.



HANGING GARDENS OF BABYLON, GRAND VIEW TRAIL.

Photo, Putnam & Valentine.

**THE ARCHEAN SYSTEM.** Several of the systems of rocks made during the several periods of geologic time are represented in the Grand Canyon region. At the bottom of the canyon throughout much of its course, the Archean system, the oldest of which geologists have knowledge, is exposed. The Archean is shown in two long sections of the canyon's course. The first is from a point a short distance below the foot of Hance's Trail (about  $112^{\circ}$  long), down to about longitude  $112^{\circ} 30'$ . The second is farther down the canyon, between the longitude of  $113^{\circ} 15'$  and  $114^{\circ}$ , approximately. The Archean rock of this region was originally mainly or wholly of igneous rock, but much of it has been extensively altered by great pressure and other metamorphosing agencies. It is now chiefly metamorphic. Into the metamorphic rock which forms the body of the Archean considerable masses of igneous rock of lesser age and of various sorts have been injected. The Archean is therefore made up primarily of metamorphic rock, affected in many places by igneous rock intruded into it in later times.

Popularly, the Archean rock of the region passes under the name of granite. In that part most commonly visited, it forms the walls of the inner gorge for more than 1,000 feet above the river. It can be distinguished from most of the overlying rock because of its lack of stratification. Where it forms the wall of the canyon horizontal lines are wanting. It erodes differently from the beds above, standing with steeper slopes and rougher faces. Where it forms the inner gorge of the canyon, the canyon is narrow, steep-sided and most forbidding (Plate II). The somber appearance is emphasized by the dark color of the rock, which is in contrast with the lighter and brighter colors above. In descending to the river at some points, as at the foot of Berry's trail, horses must be left behind when the surface of this formation is reached, and the descent to the river made on foot.

The surface of the Archean, on which the younger formations rest, is often nearly smooth and much of the way nearly flat. Its flat surface appears to have been developed at a very early stage in the earth's history, by the same agencies which developed the plateau surface above at a much later time and by the same forces which are developing flat land surfaces to-day. In other words, the surface of the Archean represents a surface of erosion developed before the stratified rocks which now cover it were deposited. Immediately above the Archean, in the more accessible parts of the canyon, are the nearly horizontal beds of sedimentary rock already referred to as underlying the plateau about the canyon.

**THE ALGONKIAN SYSTEM.** Just below the foot of Hance's trail the surface of the Archean declines or dips to the eastward, while the base of the horizontal beds of stratified

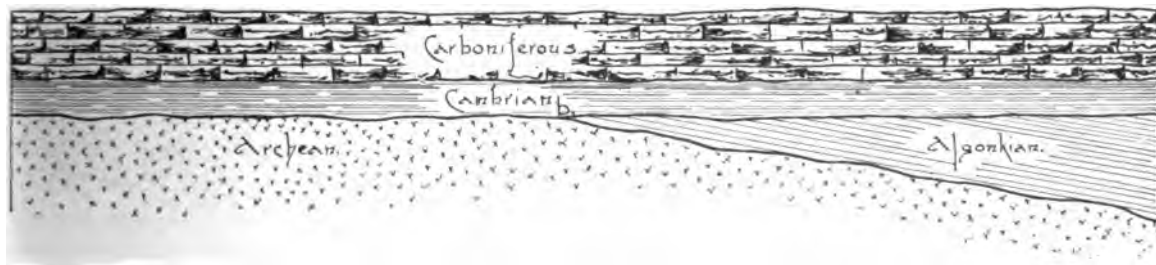


Fig. 7. Section showing the relations of the various formations in the wall of the canyon, near the foot of Hance's trail. The right hand portion of the figure is up stream, and the left hand portion down stream.



rock continues eastward in a nearly horizontal line. Between the declining surface of the Archean below and the base of the horizontal beds above, comes in another series of strata (Fig. 7). Like the beds above, they are stratified, but instead of being horizontal, they dip to the east at the same angle at which the surface of the Archean declines. This dipping series of stratified rock is of Algonkian age.

These tilted beds of sandstone and shale were originally laid down beneath the sea, as beds of mud and sand, on the nearly even surface of the Archean. The sand and mud were derived from lands which existed somewhere in the vicinity. The sediments were doubtless carried down to the sea by rivers or washed from the shores by waves, just as the sand and mud now being deposited in the sea are derived from the land. At the time of their deposition these beds were essentially horizontal. Subsequently the beds of sand became sandstone, and those of mud became shale, by cementation. That the sediments accumulated in water is shown by their stratification. That the water was salt is shown by the character of the few fossils which the beds contain. This system of rocks, the Algonkian, is the oldest system which has yielded fossils of any sort in any part of the world.

At some later time the Archean of this region and the overlying horizontal beds of Algonkian age were lifted up, converting the sea bottom of the Algonkian period into land. The uplift was unequal, causing the beds which had been horizontal to be tilted to the eastward and at the same time warping the top of the Archean out of planeness. After the conversion of the sea bottom into land a long period of erosion ensued and a new base-level of erosion was developed, involving both the Algonkian and the Archean (Fig. 7). Over considerable areas the Algonkian was completely worn away, but to the east (at the foot of Hance's Trail and above) part of it still remains.

The Algonkian beds are mostly of bright colors, among which deep, rich reds predominate, giving especial brilliancy to the coloring of that part of the canyon where they are exposed. The sedimentary beds of Algonkian age are here and there cut by dikes of igneous rock, and sheets of lava have locally been intruded between the beds of sedimentary origin. The Algonkian rocks of this region were appropriately named by Powell the Grand Canyon series.

The original thickness of the Algonkian system must have been very great. What now remains has a thickness of nearly 12,000 feet, as measured by Walcott. The length of time necessary for the deposition of such thicknesses of sediment was almost inconceivably long. After they were deposited, the further time necessary for the uplift (for such movements are usually very slow) and for the development of the flat surface of erosion (Fig. 7) which cuts across Archean and Algonkian alike, was also very long. It appears to have occupied all the earlier part of the next succeeding (Cambrian) period. The time necessary for the deposition of the rocks of the Algonkian and for the erosion which it suffered after being uplifted is doubtless to be reckoned in millions of years.

THE CAMBRIAN SYSTEM. After prolonged erosion had developed the flat surface across Archean and Algonkian alike (Fig. 7), the region again sank below the level of the sea, and over the submerged plain, other sediments, derived from lands which still lay somewhere in the vicinity, were deposited. These sediments were subsequently cemented into sandstone, shale, etc., and now overlie the older formations.

This system of rocks is the Cambrian, but the beds which are present in this region seem to have been deposited in the later part of the period, leading to the inference that

the region was out of water and suffering erosion in the earlier part. At the foot of Hance's Trail and above, the Cambrian beds rest on the Grand Canyon series (Fig. 7); but a short distance below, the Algonkian disappears, and the Cambrian system rests directly on the Archean (Fig. 7). In most of the readily accessible parts of the canyon the Cambrian rocks are the lowest bedded series, the strata of which are approximately horizontal. They are of much duller colors than the Algonkian below or the Carboniferous above. The broad terrace two-thirds or three-fourths of the way from the top to the bottom of the canyon is at the level of the Cambrian sandstone in those parts of the canyon most visited (see Fig. 5 and Plate III). The thickness of the Cambrian system in this region is more than 1,000 feet. The Cambrian of this region is often known as the Tonto formation, the principal rock of which is sandstone. It is not rich in fossils, though they are sufficiently numerous to establish the age of the beds, and the fact that the sediments were accumulated in salt water. The character of the sediments and their structure show further, that the water in which they were laid down was shallow.

Sometime subsequent to this period of depression and submergence the area seems again to have emerged from the sea, either by the rise of the land or by the sinking of the sea level, and the surface underwent a third period of prolonged erosion. So far as now known the surface was not at this time lifted high above the water, and if the erosion accomplished was great, the fact is not known.

ORDOVICIAN, SILURIAN AND DEVONIAN SYSTEMS. There is in the canyon slight, if any, representation of the formations of the Ordovician, Silurian and Devonian periods, though strata belonging to the last of these systems are known to occur at some localities not far away. The absence of these systems may mean either that the region was above sea level during these periods, and so not receiving sediments, or that sediments of these periods, once deposited, were afterward removed by erosion before the Carboniferous beds were laid down.

THE CARBONIFEROUS SYSTEM. Whatever the condition of the region during the periods last mentioned, it was again submerged beneath the sea in the Carboniferous period, and during this long interval of time, sediments, primarily sand and organic products, such as shells, coral, etc., were deposited to the depth of more than 2,000 feet. The upper part of the existing portion of this system constitutes the surface of the larger part of the present canyon plateau, though the region did not emerge from the water at the end of this period. Rather did it remain submerged, receiving sediments brought down from surrounding lands during the Permian, Triassic, Jurassic, and perhaps through the Cretaceous periods.

The Carboniferous formations constitute the upper half of the canyon's walls. The lower part of this system is the Red Wall formation, conspicuous alike for its redness and for the wall-like face which it presents. Above is the Aubrey limestone and sandstone, of buffish and whitish colors. This extends from the Red Wall up to the top of the canyon.

The Carboniferous formations of this region are notably unlike those of the east, where extensive beds of coal were made from the vegetation of the great marshes which there prevailed.

THE PERMIAN, TRIASSIC AND JURASSIC SYSTEMS. The Permian system has but slight representation in the immediate vicinity of the canyon. Beds of Permian sedimentary rock are found in some of the buttes (Plate IV) of stratified rock which rise



Plate II. Showing the contrast in the erosion of stratified and unstratified rock.

Copyright, 1900, by H. O. Probst.

above the general level of the plateau. They have not always been differentiated from the formations of Triassic age. The red sandstone quarried at Flagstaff probably belongs to one or the other of these systems, and both systems, as well as the Jurassic, appear to the north and east of the canyon region. The terraces by which the surface of the plateau of the canyon region ascends to the high plateaus to the north are made up in succession of Permian, Triassic and Jurassic beds. All these systems probably once overlay the territory through which the river now wends its way.

**THE CRETACEOUS SYSTEM.** Cretaceous strata do not now appear in the vicinity of the canyon, but from the relations of these strata (Figs. 3 and 4) to the east and north, beds of this age are thought by Dutton to have once covered the canyon plateau.

The sediments which make the formations of Cambrian, Carboniferous, Permian and later periods all seem to have been deposited in shallow water. Since the aggregate thickness of the several systems from Cambrian to Cretaceous is very great it follows, if the above conclusion is correct, that the sea bottom must have continued to sink as the sediments accumulated. The aggregate subsidence can hardly have been less than two miles, but such was the duration of the interval during which it took place that the settling may have progressed at an average rate of inches per century. By the close of the Cretaceous period the lower part of the Cambrian sediments, which had themselves been deposited in shallow water, were probably as much as two miles below sea level and covered to that depth by the later systems already mentioned.

**THE EOCENE SYSTEM.** After the Cretaceous period the region seems to have emerged from beneath the sea and for a time was subjected to erosion. A little later,



*Photo, Peirce & Valentine.*



Plate II. Showing the contrast in the erosion of stratified and unstratified rock.

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*Photo, Putnam & Valentine.*

**STEAMBOAT MOUNTAIN.**  
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perhaps as the result of warping of the crust, a great lake came into existence over the northern part of the plateau region, and possibly over the whole of it, though this has never been demonstrated. In this lake, as in the seas before, great thicknesses of sediment brought down from the surrounding lands were deposited. That the sediments were deposited in a lake and not in the sea, is shown by the fossils, which are remains of fresh water organisms. Following the deposition of these lacustrine sediments in the early Eocene period the lake was drained. The extinction of the lake was perhaps the result of uplift. Whether this uplift was slow or sudden, whether it was continuous or intermittent, may never be determined with certainty. It is probable, however, that it was slow rather than rapid, and that it was intermittent rather than continuous. Since that time the region has undergone still further elevation. First and last the uplift of the region since Cretaceous time has probably not been less than 15,000 feet.

### THE FIRST GREAT UPLIFT.

When the area of the Grand Canyon region finally became land, after the exclusion of the sea and the drying up of the Eocene lake, valleys and streams, taking their origin in the rainfall, began to develop. The climate of the region at that time seems to have been notably unlike that of the present, for rainfall seems to have been abundant, and if so, streams were more numerous than now. Following the habit of rivers in all places at all times, the streams of this time deepened their valleys until they were brought down

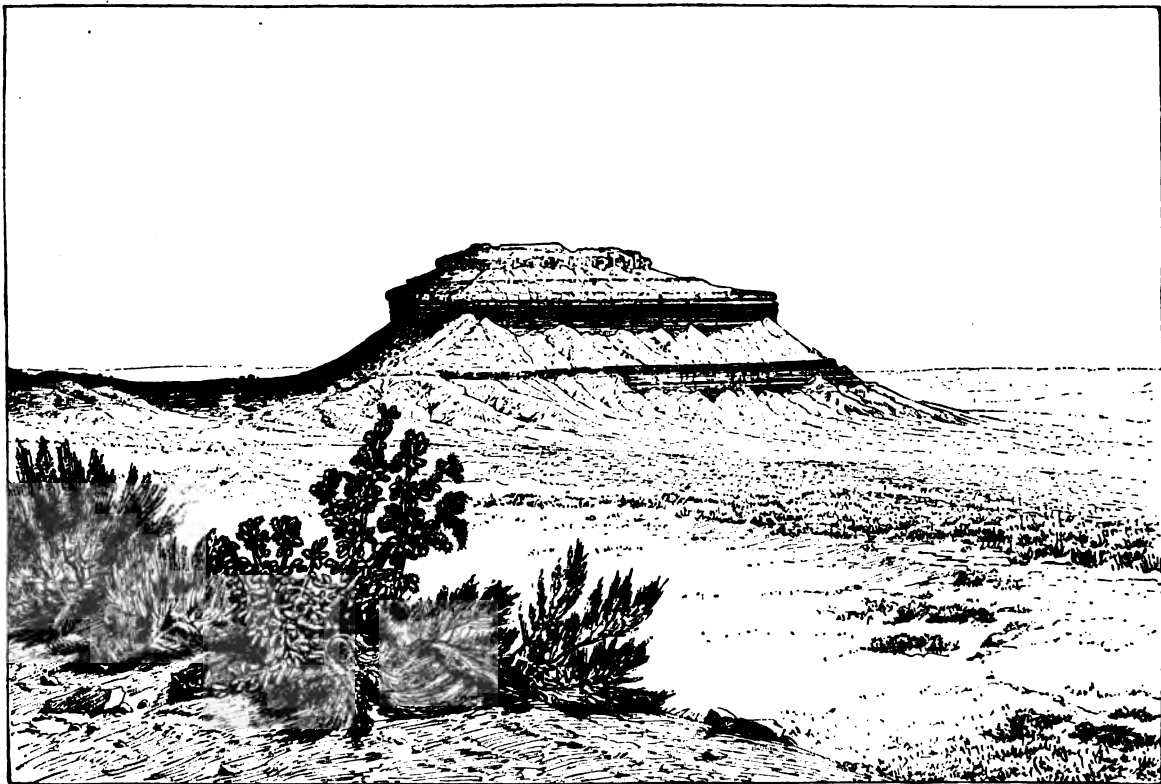


Plate IV. A Permian Butte. (Dutton.) Taken from monograph of the United States Geological Survey.



nearly to sea level. Deepening then ceased, but the valleys of both main and tributary streams continued to widen. As in all regions undergoing stream erosion at the present time, the valley flats became wider and wider, always at the expense of the intervening uplands, until they merged into one another laterally, thus doing away with the high lands between (Fig. 6). The plane of erosion developed by this long period of denudation appears to have been what is now the plateau surface. Some of the irregularities of the plateau surface, such as Red Butte, show that the erosion surface was not reduced to perfect planeness at this time. When it was developed, this plane stood some 5,000 or 6,000 feet lower than now, for erosion planes are developed only near sea level. The erosion plane has been uplifted to the extent of a mile or more since its development, though the elevation was accomplished during two somewhat widely separated periods of time.

This great period of erosion, during which the plain which was to become the plateau of the Grand Canyon was developed, appears to have occupied the latter part of the Eocene, the Oligocene and the Miocene periods. The length of this time in years can only be conjectured; but, as in the case already referred to, the duration of the period of erosion must have been very long, certainly many hundreds of thousands and probably millions of years. It was long enough to remove completely all the Eocene, Cretaceous, Jurassic and perhaps Triassic beds from the region, the greater part of the Permian, and some of the Carboniferous, in all a thickness of something like two miles of rock, as nearly as





can now be estimated. To allow so great erosion, the uplift preceding must have been at least equally great.

### THE SECOND UPLIFT,

Later, about the end of the Miocene, as nearly as now known, the erosion plain suffered further elevation. One result of this uplift was to give the streams greater velocity, and so to increase their erosive power. In the uplifted plain the Colorado cut its valley about 3,000 feet below the level, down to the level of the great terrace (Fig. 5) which now forms the inner canyon. By the time this level had been reached the stream had become so sluggish that its downward cutting was slight. The valley however, continued to grow wider. The result was the development of the outer canyon of the Colorado, several miles in width. This period of erosion seems to have corresponded very nearly with the Pliocene period.

The time necessary to excavate this broad valley was notably less than that needed to reduce the earlier surface to a base-level, but it was probably longer, relatively, than might at first appear, for while it was being cut the climate was probably dry like that of to-day. This is indicated by the fewness of the valleys tributary to the main canyon. Had the

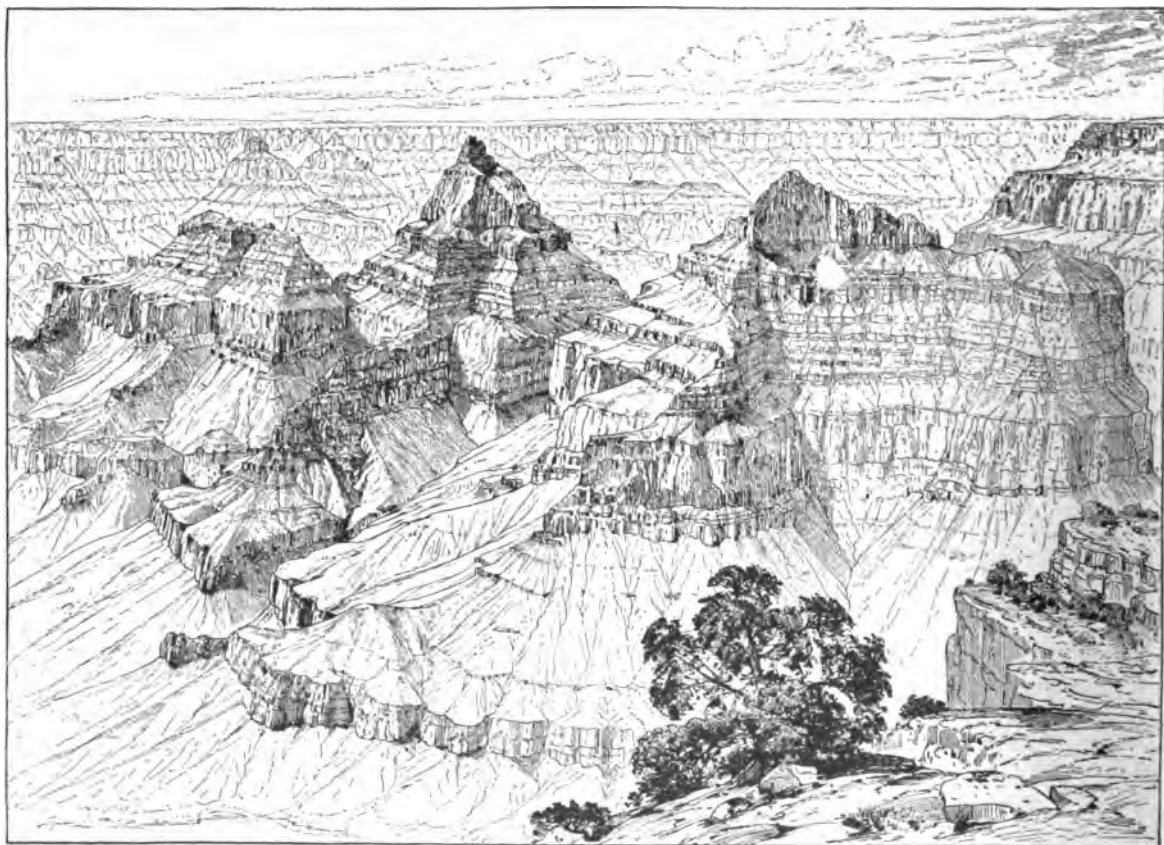


Plate I. Vishnu's Temple. A detail of erosion in the Grand Canyon. Taken from monograph of the United States Geological Survey.

climate been humid, tributary valleys would have been far more numerous. The arid condition seems to have come in with the uplift of the plain which had been developed by the close of the Miocene.

### THE THIRD UPLIFT.

Still later, about the close of the Pliocene period, the region was again uplifted to the extent of 2,000 or 3,000 feet, and the river, having its velocity again accelerated, began to cut a new and narrow valley in the bottom of the plateau. Since that time the river has made the inner gorge of the canyon. (Plate II) 1,500 to 2,000 feet in depth, and the downward cutting is still in progress. When the stream shall have cut its channel so low that its current becomes sluggish, it will cease to cut downward, but the widening of the gorge will still continue.

The cutting of the inner gorge has occurred in times which, geologically speaking, are very recent. It seems to be the work of the closing stages of the Pliocene and the Pleistocene periods, and these periods are probably much shorter than any of the earlier ones recognized in the classification.

**FAULTING.** Faulting (Fig. 1) has been an element in the development of the present topography of the region. The faulting appears to have begun with the first great uplift after the early Eocene, but the earlier faulting had little influence on present topography. The faulting which accompanied the uplift at the close of the Miocene (i. e., the uplift which brought the plain of erosion into the position of a plateau) is probably the oldest



*Photo, Putnam & Valentine.*

PINNACLES AT HEAD OF SHINUMO, NORTH SIDE OF CANYON.

faulting which is now reflected in the topography, particularly of the region north of the canyon. In the later uplift, faulting along the same lines may have been continued.

**VOLCANIC ACTION.** The volcanic formations of the region are probably all of Cenozoic age, though the oldest may be late Cretaceous. The volcanic forces had become active before the close of the Eocene, for volcanic ash is one of the constituents of the Eocene lake beds north of the canyon. The older lava beds, like that which caps Red Butte, seem to have flowed out long before the end of the period of great erosion which developed the relatively level surface of the plateau. It is to the protecting influence of such lava beds, which resist erosion more effectively than the sedimentary rock of the region, that many remnants of Permian and Triassic strata owe their preservation.

The greater extrusions of lava seem to have occurred before the close of the Miocene, but volcanic activity continued on a diminishing scale up to very recent time. During the later stages of vulcanism of the region, the material ejected seems to have been largely in the form of cinders (lava fragments) rather than lava flows. The youngest of the lava flows, as well as many of the cinder cones, are so fresh that they must be thought to date from the Pleistocene period.

The finest of the recent volcanic cones as well as the best examples of recent lava flows are in the vicinity of Sunset Mountain, within easy reach of Flagstaff. Some of them are so fresh that they must date from the yesterday of geology. At few points on our continent are recent volcanic phenomena so well exhibited and so readily accessible. From the top of Sunset Mountain scores of recent cinder cones are readily seen, and from the top of San Francisco Peaks, the most easily accessible of their height (nearly 13,000 feet) on the continent, a great range of volcanic phenomena as well as one of the most impressive panoramas of the world may be seen.



ARIZONA INDIANS IN VICINITY OF GRAND CANYON.

Photo, W. H. Simpson.

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# THE WITCHERY OF IT ALL.

BY NAT M. BRIGHAM.



NAT M. BRIGHAM.

One of the most ardent admirers of the Grand Canyon is the well-known lecturer on "Strange Corners of Our Country." Mr. Brigham is eloquent in his belief that the people of the East little realize the extent and character of the scenic wonders of the undeveloped West.

With this in view he began lecturing a year ago. Many critics esteem him a worthy successor of Stoddard in the travel-lecture field. His repertoire includes: "The Grand Canyon of Arizona," "The Land of the Snake Dance," "The Apache Warpath," and "Utah and the Mormon Commonwealth."

By permission of Mr. Brigham, we insert the following extracts from his deservedly popular lecture on the Grand Canyon:

## IT SLEEPS AND DREAMS.

**B**UT you should look upon its glories when the moonlight falls upon the waiting earth. How that old canyon sleeps and dreams! Even the life that seemed to pulse across the dreary wastes at noonday is still. The tumbling river subsides. The miles on miles of mighty cliffs sleep, and sleep again. Shadowy types of temples, weird and ancient—huge altars, wrapped in mystic trappings, fantastic groupings—start into life. Niches and corners which by day were bare and meaningless, now hold figures that startle you. River and mountain, cliff and wall are lifted into glory, and this whole vast upland, which by day may have repelled you because of the agony of the ages, now lies in dreamful slumber, pure, white and still as a nun at her prayers, and as far as the eye can reach you may behold this whole stupendous waste lifted into a glory like unto the glory of paradise. \* \* \*

The question often comes—Are not the blue of the sky, the crimson of the rock, the amber of the clouds intensified in these color views? My answer is—Who but God could paint the sky, could stain the rock, could hold the amber giants swinging in the air? A thousand times have I heard the beholder exclaim: "No tongue can describe it."

Am I myself unduly moved? Possibly. But I love nature. She has not a mood



CAMP OF FOREST RANGER AT ROWE'S WELLS.

that does not woo me. From boyhood the scent of the violet would disquiet me. The odor of our New England mayflower would summon up an endless trail of holiest memories. The silence and scent of the deep wildwood would thrill me deeper than any strain of music.

You could not dream then how this labyrinth of chasms allured me—its unfathomable shadows, moving in resistless majesty; its amphitheaters swelling out, until in fancy they are peopled with form of temple and tower and town; the illusive haze that cloaks its myriad peaks; the royal purple of its shadows; its miles of color bands, and every band an age; its mile-deep walls, red with a passion sublime, reaching from this puny age of ours back to that mystic period when the waiting earth first quickened in the throbbing womb of time. The miracle of a sunrise that floods the unanswering wastes until the far reaching line of cliffs seems floating in the rising tide of a crimson sea. The carnage of a sunset that with blood-red banners marches resistless over the ruined wastes of cities until the distant watch towers flash defiance, then signal defeat, then sink back into the night, until the far-flung line of battlements goes down in the unequal struggle and this great underworld grows black in sullen wonder.

The witchery of a night that tips with unearthly light the slowly emerging forms you have known by day, bringing within hailing distance the dim outlines of the thither rim; the night that consorts with the very clouds of heaven to bring a mimic sky to earth; the night that woos the sighing pine and the bending stars; the night that bids the crescent moon bend low to bid you wait her fullness, what time in full-orbed splendor she swings resistless above this world-old scene, until in fancy your vision sweeps the fields where the nations of the earth have bivouacked, folded in such deep silence that neither the morning sun nor the trumpeter of God could rouse them from their lethal slumber. The infinite hush of it all! The mirage of the City Celestial!



JOHN HANCE'S OLD LOG CABIN HOTEL.

# AMERICAN ART AND AMERICAN SCENERY.

BY THOMAS MORAN.



THOMAS MORAN.

Thomas Moran, the great artist, is now sixty-four years old. Ever since his first trip to Europe, in 1862, he has held a commanding position among American landscape painters and etchers. He is to-day, in his studio at Easthampton, Long Island, busy with new pictures which are as powerful and as charming in form and color as any of his earlier successes.

Mr. Moran has perhaps achieved his most notable triumphs with American subjects—particularly Rocky Mountain scenery. Two of his masterpieces, *The Yellowstone Canyon*, and *The Grand Canyon of Arizona*, are hung in the national capitol at Washington.

In the early summer of 1901, accompanied by Geo. Inness, Jr., and Geo. H. McCord, he revisited the Grand Canyon. An article written shortly after that memorable trip is first printed herein. The topic—"America for Americans"—is a favorite one with him.



Photo, W. H. Simpson.

JOHN HANCE, THOS. MORAN, GEO. INNESS, JR., AND G. H. McCORD.



It has often occurred to me as a curious and anomalous fact, that American artists are prone to seek the subjects for their art in foreign lands, to the almost entire exclusion of their own.

This disposition is, perhaps, attributable to a prevailing idea that to reach and see the pictorial wealth of the far southwest, involves much time, hardship, expense, and above all, dangers that do not really exist; for it is easier in every way to visit this land of color, sunshine and magnificent scenery than to go to Europe, and much more comfortable traveling.

Another reason alleged by many artists why our own great country has been neglected is, that the grand in nature is not paintable; that is, not suited to pictorial representation.

This idea is, I think, due to the influence of foreign teaching, especially of the French school, where most of our American art students receive their training.

This school of painting, in landscape, has never aimed at anything beyond what might be called the pastoral; that is, a quiet poplar-lined riverside, or a bit of swampy ground reflecting a few trees under the gray and colorless skies of their country.

This pastoral landscape seems to have satisfied the ambition of their best painters; and perhaps it could not be otherwise, as men will paint best that which they know best and are most in sympathy with.

### NATIONALISM IN ART.

That there is a nationalism in art needs no proof. It is bred from a knowledge of and sympathy with their surroundings, and no foreigner can imbue himself with the spirit of a country not his own. Therefore he should paint his own land.

The English have painted England as nobody but an Englishman could. The same can be said of the French, the Dutch, the Spanish, and so on.

Our countrymen seem to ignore this fact. They go abroad to study and return laden with the foreign idea, and unthinkingly settle down to imitating as near as they can the subjects, style and method of their masters. Instead of seeking their subjects and inspiration in their own land and applying their technical skill in the production of works national in character, they seem to devote themselves to imitations of foreign masters, and many even find it necessary to make occasional trips abroad to lay in a fresh stock of ideas for imitation.

Before America can pretend to a position in the world of art it will have to prove it through a characteristic nationality in its art, and our artists can only do this by painting their own country, making use of all the technical skill and knowledge they may have acquired in the schools of Europe and the study of the art of the past.

I have been led to these reflections through my familiarity with the scenery of our own unrivaled country from the Atlantic to the Pacific Ocean. There is no phase of landscape in which we are not richer, more varied and interesting than any country in the world.

### ARTISTIC FUTURE OF AMERICANS.

On a recent visit to the Grand Canyon of Arizona I was more than ever convinced that the future of American art lies in being true to our own country, in the interpretation of that beautiful and glorious scenery with which nature has so lavishly endowed our land.



## AMERICAN ART AND AMERICAN SCENERY. THOS. MORAN.

It is not my purpose to undertake any description of this awe inspiring and exquisitely beautiful gorge, a whole country in itself. That has been done by many writers, notably by Mr. C. A. Higgins, whose word picture of the great canyon is a poem, and to my thinking the best that has been written. Of all places on earth the great canyon of Arizona is the most inspiring in its pictorial possibilities.

My chief desire is to call the attention of American landscape painters to the unlimited field for the exercise of their talents to be found in this enchanting southwestern country; a country flooded with color and picturesqueness, offering everything to inspire the artist, and stimulate him to the production of works of lasting interest and value.

This Grand Canyon of Arizona, and all the country surrounding it, offers a new and comparatively untrodden field for pictorial interpretation, and only awaits the men of original thoughts and ideas to prove to their countrymen that we possess a land of beauty and grandeur with which no other can compare. The pastoral painter, the painter of picturesque genre, the imaginative and dramatic landscapist are here offered all that can delight the eye, or stir the imagination and emotions.

With truth and perceptions of a poet, Mr. Higgins has described the canyon as "An inferno swathed in soft celestial fires, unflinchingly real, yet spectral as a dream. It is the soul of Michael Angelo, and of Beethoven."

Its forests of cedar and pine interspersed with aspens and dwarfish oak are weird in the extreme; its tremendous architecture fills one with wonder and admiration, and its color, forms and atmosphere are so ravishingly beautiful, that, however well traveled one may be, a new world is opened to him when he gazes into the Grand Canyon of Arizona.



Photo, G. Wharton James.

INDIAN SCHOOLHOUSE IN CATARACT CANYON.



# THE LAND OF PATIENCE.

BY PRESIDENT DAVID STARR JORDAN.



DAVID STARR JORDAN.

Several seasons ago a company of California educators, under the lead of Charles F. Lummis, editor of "Out West," visited the Grand Canyon by way of Flagstaff. One of the members thereof was Dr. David Starr Jordan, President of Stanford University.

He published a brief account of the trip in Mr. Lummis' magazine, taking as his theme the novel one of the infinite laziness of this corner of the world.

A deep student of nature, President Jordan is not a man to be carried away or unduly impressed by any of her strange workings, and his calm analysis of the greatest work of erosion is of special interest. His impressions are submitted as the latest word of a busy man on a big theme:

## THE OLD REPOSE.



NOT its grandeur and beauty, its weird magnificence, its sublime supremacy; all the world knows this. But it impressed me not the less through its infinite laziness.

While the rest of the earth's crust has been making history and scenery with all the great earth-molding forces steadily at work, this corner of the world for ten thousand centuries and more has rested in the sun.

While mountains were folding and continents taking form, this land of patience lay beneath a warm and shallow sea, the extension of the present Gulf of California. For centuries untold its sands piled up layer on layer.

When at last the uplift of the Sierras changed the sands to dry land, then the forces of erosion began and the sands were torn away as sleepily as they had been deposited before. A mile or two in vertical depth had been stripped away from the whole surface, leaving only flat-topped buttes here and there to testify to the depth of the ancient strata. The flinty limestones half-way down interposed their resistance. The swift river from the glacial mountains which had done this work narrowed its bounds and applied itself more strictly to its business. Cutting at last through the flinty stone, it made quick work of the shales beneath it, and dropping swiftly from level to level, it is now at work on the granite core of the earth at the bottom.

## THE RIVER WORKED ALONE.

Even in this it has made fair progress, but the river has done all this alone.

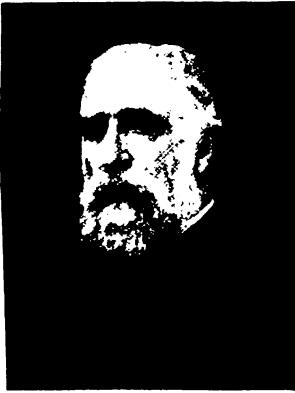
No ice, nor frost, nor earthquake, nor volcanic force has left its mark on the canyon.

Ice would have made a lake of it. Frosts would have changed its cliffs to slopes. Earthquakes would have crumbled its walls, and volcanoes would have smeared them with lava. But none of these forces came to mar or help.

In the simplest, easiest and laziest fashion rocks were deposited in the first place. In the simplest, easiest and laziest fashion they have been torn up again, and a view from the canyon rim almost anywhere shows at a glance how it was all done.

# ON THE BRINK OF THE CANYON.

BY CHARLES DUDLEY WARNER.



CHARLES DUDLEY WARNER.

In the popular travel book written by the beloved American author, Charles Dudley Warner, entitled "Our Italy" (published and copyright, 1892, by Harper & Brothers), occurs a chapter on the Grand Canyon.

Mr. Warner visited Arizona on his way to California a decade ago. He ventured the long ride from Flagstaff and achieved the rare distinction of being the first noted American author to tell the world about the greatest thing in it. By permission of the publishers a few extracts from his canyon article are appended. They reveal, as do Mr. Warner's other writings, a scholarly temperament keenly appreciative of Nature's handiwork and peculiarly susceptible to the subtle charm of scenery like that of our southwestern wonderland.

He says:

## THE MAGNIFICENCE OF IT.



HE whole magnificence broke upon us. No one could be prepared for it. The scene is one to strike dumb with awe or to unstring the nerves; one might stand in silent astonishment, another would burst into tears.

There are some experiences that cannot be repeated—one's first view of Rome, one's first view of Jerusalem. But those emotions are produced by association, by the sudden standing face to face with the scenes most wrought into our whole life and education by tradition and religion. This was without association as it was without parallel. It was a shock so novel that the mind, dazed, quite failed to comprehend it. All that we could grasp was a vast confusion of amphitheatres and strange architectural forms resplendent with color. The vastness of the view amazed us quite as much as its transcendent beauty. \* \* \*

Turning suddenly to the scene from another point of view, I experienced for a moment an indescribable terror of nature, a confusion of mind, a fear to be alone in such a presence. With all this grotesqueness and majesty of form and radiance of color, creation seemed in a whirl. \* \* \*

## CITY OF THE IMAGINATION.

I was continually likening this to a vast city rather than a landscape, but it was a city of no man's creation nor of any man's conception. In the visions which inspired or crazy painters have had of the New Jerusalem, of Babylon the Great, of a heaven in the atmosphere with endless perspective of towers and steeples that hang in the twilight sky, the imagination has tried to reach this reality. But here are effects beyond the artist, forms the architect has not hinted at. \* \* \* It is a city, but a city of the imagination.

It was long before I could comprehend the vastness of the view, see the enormous chasms and rents and seams, and the many architectural ranges separated by great gulfs between me and the wall of the mesa twelve miles distant. \* \* \* An adequate Niagara here should be at least three miles in breadth and fall 2,000 feet over one of these walls. And the Yosemite, ah! the lovely Yosemite! Dumped down into this

wilderness of gorges and mountains it would take a guide who knew its existence a long time to find it. \* \* \*

It reverses mountaineering to descend 6,000 feet for a view, and there is a certain pleasure standing on a mountain summit without the trouble of climbing it. \* \* \* It is a great innovation in the modern ideas of scenery. To the eye educated to any other it may be shocking, grotesque, incomprehensible; but those who have long and carefully studied the Grand Canyon do not hesitate to pronounce it by far the most sublime of all earthly spectacles. \* \* \*

The reader will find the story of the making of the Grand Canyon more fascinating than any romance. Without knowing this story, the impression that one has in looking on this scene is that of immense antiquity, hardly anywhere else on earth so overwhelming as here. It has been here in all its lovely grandeur and transcendent beauty, exactly as it is, for what to us is an eternity, unknown, unseen by human eye. \* \* \* It is only within a quarter of a century that the Grand Canyon has been known to the civilized world. It is scarcely known now. It is a world largely unexplored. Those who best know it are most sensitive to its awe and splendor. It is never twice the same. \* \* \* Travelers from the wide world will flock thither, for there is revealed the long-kept secret, the unique achievement of nature.



RUINS OF CLIFF DWELLINGS, WALNUT CANYON, ARIZONA.

## A RHAPSODY BY "FITZ-MAC."



FITZ-JAMES MCCARTHY.

At Colorado Springs, in the shadow of Pike's Peak, lives a man who writes short tales of the West under the pen name of "Fitz-Mac"—made from the first part of each of his names.

He likes a story and can tell one well. His style is irresistibly free; his writings bright, breezy and buoyant. He is a "past master" in word painting, and in his romances of the Rockies gets close to Nature.

By profession Mr. McCarthy is a journalist. Writing one June day from the Grand Canyon to his home paper, the Colorado Springs Gazette, he opened up his own heart and laid bare some of those personal impressions which come to us all, but which are elusive and rarely coined into words. His letter is a careful study of the emotions which this abysmal chasm produces:

### A GEOLOGICAL APOCALYPSE.

**T**HIS Grand Canyon of Arizona is the most stupendous and astounding of all the natural wonders of the earth—and of all earth's natural wonders the latest and the least known.

It is a geological apocalypse, half mystery and half revelation.

It is at once the most awful and the most irresistible thing I have ever beheld. It is a paradox of chaos and repose, of gloom and radiance, of immeasurable desolation and enthralling beauty. It is a despair and a joy; a woe and an ecstasy; a requiem and a hallelujah; a world-ruin and a world-glory—everything in antithesis of such titanic sort.

Grotesque architectural forms (ancient water-carvings), hundreds of miles of them, loom gigantic and phantasmal through the half-concealing, half-revealing veil of chromatic mist that hangs upon the stupendous spectacle. It is Nature with her flesh cast off reclining in her bones with a drapery of rainbows and smiling at Time and Death, puissant enemies of man's inquisitiveness and divine ambition. Yet it is only a chasm in this wide, mid-mountain desert, or semi-desert, of Utah and Arizona—a chasm as crooked as a raveled thread of yarn and seven hundred miles long in zigzag measurement. And in that chasm, more than a perpendicular mile below the rim of the plain from which we glimpse its shining surface as a mere ribbon of water in the far and deep perspective, is a surging, plunging, grinding river, deep enough to be navigated a thousand miles but for the rocky rapids and plunging cataracts that obstruct—a river whose ancient banks it is thirteen miles between, and through whose channel a rising continent slowly poured the waters of a vast inland sea which covered "the great basin" of Utah, lower Idaho, Nevada and part of Colorado some millions of years ago.

Between those far-echoing banks, all the phantasmal forms of rock mentioned before, carved by the rushing, sand-laden waters—towers, domes and columns titanic, based in the abyss, carved from the top downward, through thousands of feet of soft or vitreous sandstones, through thousands more of marbled limes, through other thousands (or perhaps only hundreds) of adamantine granites. And the massive colors radiating from these rocks as heat radiates, and blending in the silent, lonesome atmosphere of the desert and the abyss into a very miracle of chromatic glory—what an unparalleled spectacle!

Oh, the awful grandeur of it! Oh, the unique, the charm! It is a spectacle that speaks to the soul of with the tongues of a million—of multi-million—

e sublime pathos in it all, no art, I am not sure but Moran's noble voice in the scene that presses the as you gaze.

### A THOUGHT-COMPELLING SCENE.

What a thought-compelling scene! What, the patient, resistless will of world-forming nature has this river of the desert by the suave but bed in the adamantine granite since that yesterday when the Ptolemies were building their pyramids, yet a thousand millions of Ptolemy-tombs would Time is Nature's servant while man is Time's.

that overcomes you, but that your and elusive quality. This great immensity, that enthralls your imagination and mystifies your senses by its vastness, and by the vast, responsive to divine regret.

Shrive yourself, oh gabbling and exclamatory seeker of wonders with the clinched hand and cry Peccavi! Peccavi! oh, ye wearied and satiated spirits in the red and yellow silences of this abysmal scene. Shrive yourselves ere you approach, of all your little, vainglorious conceits, of all your pretty, gabbling, rhetorical formulas of exclamatory ecstasy. They have served you well enough, no doubt, to voice the whole gamut of your delight, surprise and amazement in the presence of such noble and pleasing wonders as Niagara, Yosemite, Yellowstone, or even the Alps; but such safe and well-authorized exclamations as "magnificent," "grand," "sublime" have only a puny and altogether inadequate relation to the chaotic maze are endued with the within you by the appalling grandeur of the scene, not to be insisted on, nor denied; you cannot exclaim if you are hopelessly sane you do not feel. They are altogether inadequate, and if ears petty and almost meaningless. It is the inquisitive globe-trotter and searcher who remove the sandals from your feet as one of the Lord seeking absolution. For rashly denying the power of nature to subvert to overawe, to subdue and reduce to stupor, you are enraptured by the tragic spectacle of devastation, by the mystery of splendors unique, resistless and overwhelming which Chaos hath wrought and here hidden away in the bosom of this wide, mid-mountain desert.

### TRAGEDY.

Without a kodak and the loquacious guide-book, to the presence of this wonder that dwarfs all other wonders elsewhere that astonish, that bewilder her utterance—juvenile, self-deceiving, and by the bewilderment of the measureable, and by the overwhelming which Chaos hath wrought

### ITS VASTNESS.

Here you might lose a hundred Yosemitees and never be able to find them again. Here a dozen Niagaras would form but minor details in the stupendous scene. You might scatter the whole mass of the Alps through the 300 miles of this abysmal chasm in Arizona without filling it up—700 miles in total length, but not throughout of such sublimity as here.

Who can adequately describe the scene?—who can describe the indescribable?

In its stupendous ensemble the spectacle is too vast for art. It is indeed almost too much for human thought. You cannot behold it for the first time without a gasp, however blasé your emotions have become by globe-trotting. There is a spirit of cosmic tragedy, of divine woe, in the scene which sends a diffused pain through the emotions

## A RHAPSODY.

fascinating, for this imperial tragedy is draped and curtained with all the majestics; with all the imperial magnificence of orange hues vanishing into massive, the gorgeous, the magnificent swept and swirled by great Nature's matic revelation that bursts upon the all the choirs of heaven had broken in which runs a vague but penetrating

### MORAN'S INTENT

Hither, to the painter in the

completely unique to fashion. one, save only Moran—certainly no expression for the unique splendors, the fasci

But for a truth the finest effects here are pen. They give themselves up only to the pen. can do more than suggest what they are by ink cannot paint a silence, nor a sound, nor an odor skillful you may suggest them to the imagination does that admirably. It gives one sublime repose of those vast suggest

## A RHAPSODY.

while yet you are enraptured by its beauty. And think, can touch—or scarcely touch, for on reflection the picture does strongly suggest it. It is this divine unconscious sob from your breast, you know not why.

## “FITZ-MAC.”

the sublime pathos in it all, no art, I am not sure but Moran's noble voice in the scene that presses the heart as you gaze.

## IN NEED OF SYMPATHY.

It is not the matchless immensity of it, I think, that overcomes you, but that your senses cannot quite encompass and analyze its unique and elusive quality. This great impassive thing that frightens you by its appalling immensity, that enthralles your imagination by the magic of its matchless beauty, that bewilders and mystifies your senses by the vague suggestion of fragrance and melody in its gorgeous purples, and by the vast, echoless silences of its Pompeian reds and yellows, is inexorable and unresponsive to your puny emotions. That is what fills you with a nameless longing, a divine regret. That is what makes you sob unconsciously as you gaze off into the abysmal, chromatic splendors of the scene. Your soul hungers for a sympathy which the great spectacle is too impassive, too inexorable, to yield. The inexorable always affects us like that in our psychic moods. The generous mind receives always a sensation of diffused pain from any spectacle or any emotion that baffles complete expression, and the divine pathos of this is as undefinable, as inexorable, as resistless as death—and as lovely as the hope of life everlasting.

Is it the sympathy of one sense with another (it must be that) which beguiles the reason into belief that the colors in this ravishing, chromatic maze are endued with the magic of melody and odor? This is something not to be insisted on, nor denied; you feel it or (for you) it is not so. Of course if you are hopelessly sane you do not feel anything of the kind.

## THE WORLD'S SUBLIMEST TRAGEDY.

It behooves you, oh, you of the soulless kodak and the loquacious guide-book, to come meekly and with bared feet into the presence of this wonder that dwarfs all other wonders of the world, for it is here and nowhere else that Nature has done her uttermost; here a world's sublimest tragedy was enacted—is still enacting with all scenes set; a tableau vivant, a glorified despair, a divine woe; gorgeous, mysterious and abysmal; a triumph of chaos and devastation; yet not ghastly and forbidding, strange to say, but



THROUGH THE PINES, FLAGSTAFF TO WALNUT CANYON.

fascinating, for this imperial tragedy is not set amidst ignoble and plebeian scenes, but is draped and curtained with all the massive and imposing dignity of Pompeian reds and yellows; with all the imperial magnificence of the Tyrian purple; with all the gorgeous splendors of orange hues vanishing into violet, that go with a tropical sunset; with amber-greenish lights that belong to the creeping break of dawn—and all these, the massive, the gorgeous, the magnificent, the sensuous, the brilliant, the mellow, the tender, swept and swirled by great Nature's unerring brush into a ravishing, harmonious, chromatic revelation that bursts upon the view with an effect as if the skies had opened and all the choirs of heaven had broken into a grand and joyful overture, an allegro through which runs a vague but penetrating minor chord of woe.

### MORAN'S INTERPRETATION.

Hither, to this point of the chasm whence I am writing, long ago came Thomas Moran, the painter, and painted for the people of the United States that great scene which hangs in the capitol, and which only a few can as yet appreciate—the few who have beheld the wonderful spectacle. All others are bound to regard it as a luxurious lotus-dream of color and mystery.

Moran's great picture tells the truth as one sees the truth, gazing upon the scene with the poet's eyes and feeling its frightful grandeur with a poet's soul. Any other conception of it is worse than nothing—measurements, calculations, note-book loquacity, kodak mementos, all these vulgarize the impression of a thing too stupendous and too completely unique to furnish the mind with any direct and definite expression; and no one, save only Moran—certainly no artist of the pen—has found even approximate expression for the unique splendors, the fascination and the awe of this unparalleled scene.

But for a truth the finest effects here are altogether uncommunicable by brush or pen. They give themselves up only to the personal presence, and no painter or writer can do more than suggest what they are by indicating how they make him feel. You cannot paint a silence, nor a sound, nor an odor, nor an emotion, nor a sob. If you are skillful you may suggest them to the imagination but that is all, and Moran's fine picture does that admirably. It gives one sublime glimpse of that mysterious and abysmal repose, one irresistible suggestion of those vast and sublime silences, one amazing flash of that marvelous scheme of color, suggesting melody and fragrance. And that is all which human skill can convey by brush or pen.

This is certainly no scene to be boggled by your sign-painting blockhead of an artist, with complacent reliance on his compasses and perspective scale, and paint pot and palette. There is a great tragic soul in the scene, which the soul in the artist must clasp or fail utterly.

### NO PLACE FOR RHETORIC.

And as for the gifted space-writer—well, everything can be forgiven in this overwhelming presence except rhetoric. Here, where anguish struggles against joy for the soul of the beholder, rhetoric is worse than a mockery of the thoughts incommunicable that surge through the mind—here, by this deep pre-Egyptian grave of Nature's patient digging, gorgeous, mysterious and solemn, where Time, the mother of worlds, has sepulchered her dead children, the centuries and millenniums of the past—here, where winds are born and cradled—here, where desert sunsets faint and fall and daily spill their



gorgeous colors on the columned walls of Time's abysmal tomb, rhetoric is something worse than a presumptuous and profitless vanity; it is a profanation.

Pray spare me, in this mysterious and subduing presence, from the categorical inquiries that will naturally rush to your tongue—I cannot answer them; my emotions, this day, are in thrall and I wish to reflect on "the thoughts that arise in me." This wonder has been scientifically observed, surveyed and studied by technical experts for the government, and you will find all that you would ask soberly and precisely answered in the government's magnificent publications on the subject, which will be found in any large library. Ask to see the report on the expedition of Lieutenant Whipple of 1853-4; the expedition of Lieutenant Ives in 1858; that of Major Powell about 1868; that by Lieutenant Wheeler, published in 1875, vol. III, and whatever else has followed. If you can read but one, Major Powell's is by far the completest—a superb publication, containing illuminated lithographs.

### COME AND SEE.

Come to see it. There is no hardship in the journey. The railroad now comes directly to the Grand Canyon. You must not conclude that because it is in Arizona it will be found hot. All the way to the "rim" the altitude is about 7,000 feet and the temperature, in consequence, is as cool and refreshing as by the seaside.

Come and see it. The trip will be a grand episode in your life. The matchless spectacle will become a noble and deathless memory.

Come and behold the indescribable scene, where silence seems to have dimension and color, and color to have melody and fragrance.

Come and interrogate your soul in this gorgeous and appalling presence, and then you will realize (as I now painfully realize) how inadequately I have in this lame sketch suggested to your imagination its stupendous glories and its divine pathos.



GEORGE INNESS, JR., N. A.



NOONDAY REST, O'NEILL'S POINT.



G. H. M'CORD, A. N. A.

# CLIMBING SUNSET MOUNTAIN, ARIZONA.

BY PROF. CHARLES E. BEECHER.



PROF. CHARLES E. BEECHER.

The trip to the top of Sunset Mountain, and the wide view obtained from its summit, is a fitting introduction to the Grand Canyon, whose north wall is distinctly seen from the flaming top.

When the main travel canyon-ward was by way of Flagstaff, "Sunset" was a topic of interest to all tourists. Even now this unique uplift merits particular mention in a book devoted to the canyon district.

Prof. C. E. Beecher, professor of historical geology, Yale University, New Haven, Conn., has kindly furnished an account of his experiences on Sunset Mountain, which he visited with a party from Yale University two summers ago.

This is what he writes:

## RIGHTLY NAMED.



DICTIONARY of geographical terms would doubtless reveal the fact that early discoverers have designated a goodly number of salient points on the earth's crust as "Sunset" mountains. However this may be, there is one alone that is the Simon-pure article; only one that is at sunset in the morning, at noon and at night; but one that, scorning the elsewhere necessary obliquity of the sun's rays, has its own sun-kissed summit fixed in enduring dyes. The one mountain possessing these remarkable qualities is Sunset Mountain, Arizona.

On the map this mountain is indicated as one of the great cluster of satellites surrounding the base of that noble volcanic mountain mass, San Francisco Peaks, from which it lies about ten miles to the eastward. Except by title, its distinguishing features are not represented, and the skeptical student of geography might naturally surmise that the name had been given from some chance occurrence or from a lack of characteristics, as so often happens. Such, however, is not the case.

## SCENES ON THE WAY.

Our Yale party, westbound over the Santa Fe—was first gladdened, after crossing the treeless wastes of eastern Arizona, by a vision of the mountains on the Colorado Plateau. Before leaving the desert the gash in the rising billows of rock known as Canyon Diablo is crossed, and a few miles beyond a sprinkling of cedars dots the landscape. Soon we are in a forest of dwarf cedar and piñon, increasing in density and height as the railroad climbs the plateau. By the time the outposts of the mountains are reached that splendid tree, the yellow pine of the West, dominates the forest and makes it one of the finest sylvan regions in America.

Our destination is Flagstaff, lying almost at the foot of San Francisco Peaks. Some time before reaching it we are treated to occasional glimpses of a mountain differing from all the others. Its blackened sides and its summit bathed in a warm glow of red and yellow proclaim its name. Neither map nor compass are needed to recognize it as Sunset Mountain.

The attractive and hospitable town of Flagstaff, with its circle of natural curiosities

and scenic wonders, is a most convenient tarrying place. The little excursion here described is but one of many that may be taken, each having an objective point of pleasure and interest.

For a considerable distance the road from Flagstaff follows along the old stage route to the Grand Canyon of Arizona, and skirts the eastern base of San Francisco Peaks through what is known as Coconino Park. A drive of two or three miles brings us to one end of a lake basin thoroughly drained a few years ago by part of the bottom falling out, leaving the Bottomless Pits to show the mode of exit of the water. A branch road along this former lake bed leads to Walnut Canyon, the ancient abode of the cliff-dwellers. After traveling a few miles we make a short detour to visit the ruder habitations of a like-vanished race, the cave-dwellers. These evidences of the mole men, or troglodytes, are on the summit of a lava cone several hundred feet above the valley. The outlook is one of considerable extent and grandeur. The higher peaks of the mountains are in full view near at hand, and the inimitable "Sunset" here presents some of its most pronounced effects.

The caves are volcanic vents enlarged by primitive man to form irregular rooms. Sometimes two or three lead into each other, thus constituting a suite of apartments. The outside entrance, or doorway, often opens upward, and the presence of a low ruined wall surrounding it suggests that there may have been exterior rooms and possibly a protecting roof. The inhabitants were not without skill, for we find abundant remains of well-made and beautifully decorated pottery, as well as stone implements, including a number of metates, or mealing stones.

Our road continues over the hard surface of disintegrated lava beds and through the forest of pines. There is an almost entire absence of fallen timber and undergrowth, which in most places mar the aspect and make travel so difficult. No forest fires or lumber camps have as yet blasted and scourged this region, which still remains in its original perfection and beauty.

#### NEARING THE BASE.

A few miles farther on we leave the main road and turn in the direction of our destination. The harsh grating of the wheels and the sinking of the horses' feet warn us that we have entered a cinder-covered area, and are approaching centers of more recent volcanic activity. As we advance the cinders become more incoherent and travel more



CAVE DWELLINGS.



A LAVA FIELD.

difficult, until, when about a mile from Sunset, we are forced to pity the straining horses and terminate our progress on wheels.

Sunset Mountain is before us, but we are separated from it by a barrier which seems impassable without wings. A lava field stretches directly in front. Its forbidding surface has been tossed and riven by the opposing elements of fire and steam until it represents a perfect chaos of black tumult. Had the lava stream cooled but yesterday, its surface would have been neither fresher nor rougher. Its scoriaceous and blistered exterior seems to have suffered no change, and lichens, even, have not gained a foothold.

Adopting the suggestion of the driver as to a route which would enable us to cross the lava field, we set forth. At one point a wide crack extends deep into the flow. Entering this we find progress feasible, and, by clambering over a few bad places and picking out cinder patches, we succeed in reaching the other side. The lower slopes of the mountain are gently undulating stretches of fine cinders entirely devoid of grass, but with some scattering pines. Very perfect little cinder cones rise up here and there, while interspersed with them are fantastic masses of lava hoodoos projecting their scorched forms above the smooth cinder beds, like nunataks. Occasional holes show where explosions have taken place, bulging the lava around the edge and hurling huge blocks to a considerable distance. As we approach the mountain we find that Sunset, too, engaged in the practice of lofty gunnery, as attested by numerous lava bombs lying about the base. Here the powerful forces of nature are now at rest, and this scene of former orographic strife is succeeded by one of gentle quiet in which the sighing of the pines and the occasional twitter of a passing bird alone break the stillness.

### THE ASCENT.

We selected a route up the mountain leading over a cinder-buried lava flow which streamed out of a notch in the summit rim. As soon as the ascent was begun we fully realized that Sunset is a gigantic, incoherent cinder volcano, and also that fine cinders lying at the critical angle of repose constitute a most difficult incline for bipeds. A long step upward resulted in starting a miniature landslide that buried the lower foot and brought the upper one down to nearly the same level. It required a great many of these long strides, with resultant short steps, to make visible progress. The most satisfactory method was to zigzag at a rather low angle and thus avoid the effort of extricating the lower foot. One could hardly help being reminded of the sand-pit described as the



RESIDENCE SECTION OF FLAGSTAFF.

abode of the Dead Alive, in "The Strange Ride of Morrowbie Jukes," only we realized that all there was to do to get out of the dilemma, and escape from a Gunga Dass, was to slide to the bottom.

When we were about 300 feet below the summit there was a marked change from black to brick-red in the color of the cinders. We had entered the region of perpetual sunset. Farther up, the evidences of fumarole action, with its bleaching effects, were everywhere apparent. The color of the rocks first became a rich chrome, but as we approached the top we passed over zones of bright lemon-yellow and finally pure white. This was the secret of the mountain.

Reaching the highest point, we turned about us to study the surroundings. The mountain itself had a perfectly circular crater in the summit, estimated at a quarter of a mile across, 400 feet deep and having the form of an inverted cone. To the west were the San Francisco Peaks, those ever-present landmarks of northern Arizona. To the south we looked over a vast area of forest and hills. In the eastern foreground were grouped several superb cinder cones, similar to the one we were on, though less lofty, while about them were smaller cones. Numerous lava beds reached like fingers far out to the edge of the plateau, as if to grasp the iridescence of the far-away Painted Desert. It was difficult to realize that the week before we were struggling over its deceptive rainbow-tinted wastes to reach the distant Moki Land.

Fully sixty miles to the north, over an unbroken stretch of forest, rise the banded walls of the Grand Canyon of the Colorado, with, beyond, the great Kaibab Plateau joining the line of the horizon. The stupendous expanse of the ramparts of the canyon stretching as far as the eye can reach, and the luminosity of the abyss across whose mysterious depths our vision extends, makes us realize that we are on the threshold of the sublime. Loth to leave this entrancing prospect without a complete antithesis, we descend to the bottom of the crater where all is shut out with blackness save a circle of azure overhead. Pausing again on the crater's rim, we feel that our first introduction to northern Arizona has been a success. As a geographic picture, it has surpassed the best maps; as a natural object lesson, it has been fruitful of results.

It requires no effort to descend Sunset!



SUNSET MOUNTAIN.

*Photo, Robinson.*



BOTTOM OF CRATER.

*Photo, Seymour.*

LOWER TERRACE, GRAND VIEW TRAIL.



(Copyright, 1900, by H. O. S. S. S. S.)

# CATARACT CANYON, ARIZONA.

BY HENRY P. EWING.



HENRY P. EWING.

Mr. Henry P. Ewing, United States Indian Agent, in charge of the Wallapai and Havasupai Indians, with headquarters at Truxton, Ariz., furnishes expressly for this work an interesting account of Cataract Canyon.

Mr. Ewing has resided among these tribes since boyhood. He has made a careful study of their language, religion, customs, etc., and speaks both languages fluently. While engaged as agent for them he carefully studied the geological conditions of that beautiful side gorge known as Cataract Canyon, a place which comparatively few tourists have visited, but which for romantic beauty and unique interest is well worth seeing. One may here study the Indian problem a little at first hand, as well as admire Nature's work.

## IN THE BEGINNING.



IN the legends of the Wallapai and Havasupai it is related how and why the Cataract Canyon was selected by the Havasupais as a home.

It was thus:

When the several families, or bands of people, who afterward became the great tribes of the southwest, left their sacred canyon (Mat-a-wé-dit-ta) by direction of their Moses (Ka-thät-ka-ná-vě) to find new homes, the Havasupai family journeyed eastward on the trail taken by the Navajo and Hopi. One night they camped in the Cataract Canyon, and early on the morrow took up their burdens to proceed on their journey, but just as they were starting a little child of the party began to cry, and the Kohot of the family, knowing this to be a warning from the Great Spirit, decided to remain and live in the canyon.

They found a fertile valley of some five hundred acres of level land, which was easily irrigated from the river that bursts clear and sparkling from a thousand springs at the base of the great cliffs, and rushes on, over successive cataracts, to join the Rio Colorado in its vast canyon. They called the place Ha-va-sua, meaning Blue Water; and by-and-by themselves were known as Ha-va-sua-pai (dwellers by the Blue Water), which rather pretty sounding name has in some unaccountable way become corrupted into "Yava Supai," "Supai" and "Suppai" by the whites, who have attempted to use the Indian name.

Smile not at this primitive child of nature, who thought he heard the voice of the Great Spirit in the crying of this child, for if you should stand in the spot where these primitive people stood and view the stupendous works wrought by the Supreme Architect, you will see the work of His hands in the massive cliffs that tower sublimely beyond the power of man to grasp. You may then understand why the child of nature, standing in the presence of nature's greatest achievement, may think he hears the voice of the Great Spirit in the breeze, the brook, the singing of the birds; and sees the impress of His power in these great castles and towers.

## METHOD OF FORMATION.

Seventy-five miles north of Seligman station, on the Santa Fe, the beautiful blue waters of the Cataract River burst from beneath massive beds of sandstone and limestone

rock, 4,000 feet in thickness. Owing to a peculiar characteristic of the rock strata in the whole of this region (it being "cross-bedded," or broken and cracked vertically as well as stratified horizontally), perpendicular walls thousands of feet in height are possible.

No other gorges are like those in the Grand Canyon region.

The cause is simple and plain—this previous cross-bedding or vertical fracture of the strata by some force causes the rock to let go from its place on the side of the canyon wall in long blocks, cracking off from the wall often in masses the full height of the canyon wall. In this way the vertical face of the canyon wall is forever preserved, no matter how deep the waters may erode, nor how wide the canyon may become by the falling off of these rectangular blocks of stone.

It is this same characteristic and peculiarity that accounts for the scarcity of springs of living water on the great plateaus above.

For these vertical seams and cracks in the strata allow the water from the rain and snowfall above to percolate through its 4,000 feet of strata until it reaches a strata of limestone, not cross-bedded, and which first crops out in the bed of the canyon at the villages of Havasupai. Having reached this impervious strata, all the drainage from the thousands of square miles of plateau above bursts forth through its thousand orifices into the Cataract Canyon, forming the sparkling blue river Havasu.

#### DIKE BUILDING.

But here another wonder meets the sight. While this water was percolating through these successive layers of limestone rock it became impregnated to saturation with lime,



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G. Wharton James.

HOME OF HAVASUPAI INDIANS.



Copyright, 1901, by  
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HAVASUPAI WOMAN WITH KATHAK.



and as soon as it comes out of the rock and the carbon dioxide of the air comes in contact with it the lime becomes insoluble and is deposited. During the centuries past this river has deposited such vast quantities of marl that four great dams have been built up, forming barriers across the canyon over which the river pours in cascades of such beauty and grandeur as to be beyond the power of pen to describe. Above the first dam the debris has filled in the canyon to the top of the dam, forming a level and fertile valley of some 500 acres. This land is cultivated by the Havasupais in a primitive way, following, no doubt, the methods learned from the cliff-dwellers, who occupied the dwellings still to be seen high up in the canyon walls, and evidently cultivated the soil in the valley below. Many of these ancient dwellings, well preserved, are visible to the tourist, high up in crevices in the rocks.

### RIVER AND FALLS.

After rushing in foaming torrents over Supai and Navajo falls, fifty and seventy-five feet high, respectively, the Havasu glides through a narrow canyon for half a mile, in a valley matted with masses of trees, vines and ferns, the delicate green of whose foliage contrasts beautifully with the dead gray walls of the deep, dark canyon.

Then leaping over another barrier, built by itself, the crystal waters dash in clouds of spray through masses of ferns, mosses and trees 175 feet perpendicularly into a great seething pool below. This is called the Bridal Veil Falls, from the cloud of mist and spray that ever hangs about it, and in the sunlight reflects rainbows.

For three miles we follow the swiftly but smoothly gliding stream through a canyon, whose perpendicular walls of gray limestone seem to meet overhead in the blue of the sky. Such a chasm as this does not exist elsewhere. What contrast between those dull, cold, gray, sky-reaching limestone walls that fill us with awe and dread, and the beautiful verdure and foliage of a semi-tropic clime strewn in profligate profusion below and all around.

We now come to the scenic climax of this little wonderland—the Mooney Falls. Leaping over another self-built barrier in the narrow, and now much deeper gorge, the entire volume of water (a stream four feet deep and twenty feet wide) leaps in one solid mass 300 feet perpendicularly into a seemingly bottomless pool below, where the dark blue waters, after foaming and boiling for awhile, rush away to mingle their pure crystal tide with the ever turbid flood of the Colorado.

Nothing can equal or surpass the vastness of the Grand Canyon of Arizona, but for a beauty and sublimity peculiar to itself the subordinate Cataract Canyon stands alone.

Cataract Canyon is about fifty miles from Bright Angel, the railway terminal. There is a wagon road for thirty-five miles to within two and one-half miles of the rim of Topocobya Canyon—part of the way across small hills near the south wall of the Grand Canyon, and the remaining distance across a level country in the grateful shade of scrub oak and juniper. If a detour is made to Bass' Camp the distance is a few miles greater. A well-defined trail leads to where the abrupt descent begins. From the top of Topocobya to the Supai village is about thirteen miles. The descent from the rim can only be made on horseback, which necessitates taking along pack and saddle animals, also a complete camp outfit and provisions for man and beast. The trip Bright Angel to Havasupai can be made in fifteen hours continuous travel, but a longer time is always

taken in order to camp at Topocobya over night. Water en route from Bass' Camp can only be obtained at Topocobya Springs, 1,000 feet below the rim.

The journey should only be undertaken by those accustomed to roughing it, as at the best some fatigue may be expected, although ladies have recently made the trip without much inconvenience. There are no regular accommodations now for the "Supai" side tour. Mr. Bass expects to put on a regular stage line from Bright Angel to Bass' Camp and Topocobya, using Indian ponies down the trail and camping in tents at the village. Until that time special advance arrangements will have to be made. According to a recent rule, visitors to the reservation must obtain a government permit.

One should arrange to stay in Cataract Canyon at least two days.

NOTE BY EDITOR—The Havasupais number 250 persons. Their village in Cataract (or Havasu) Canyon is not often visited. It is scattered for three miles along willow-lined Havasu Creek, from the school house to Bridal Veil Falls. These Indians are chiefly farmers, raising corn, pumpkins, melons and peaches, and are self-supporting; they also make baskets. The United States Government has established a school here. Near by are interesting ruins and cliff dwellings. There are other Indians in the Grand Canyon region who occasionally visit the Havasupais. The Utes tramp down from Nevada, crossing at West Ferry; the Wallapais come in from near Hackberry and Peach Springs, and the Mokis from north of Canyon Diablo—mainly attracted by the Peach Dance, an interesting ceremony which occurs the latter part of August, when the main crop of fruit is ready for drying. The Wallapais and the Chimiuevis frequently intermarry with the dwellers in Cataract Canyon.



BRIDAL VEIL FALLS, CATARACT CANYON.

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# JOHN HANCE: A STUDY.

BY HAMLIN GARLAND.



JOHN HANCE.

Where the Rockies reach starward are beauty and grandeur, silence and power. These influences work upon the men and women who dwell there, and if the sojourn be long enough and outside of any community, the result is a personality unlike that of the average American.

All outdoors is so big and still, so full of peaks or so horizon-open, so free from crowding and crowds, and so supreme in authority, that the sons of the hills become individualists—each fulfilling his own mission in his own way.

Thus we find unique characters everywhere in the Southwest. John Hance, the Grand Canyon guide, is one of them—a little overpraised and overrated, perhaps, but still a striking figure and closely identified with tourist travel to the canyon.

Hamlin Garland tells of Hance's peculiar ways in the following sketch, here reproduced by permission of the author:

## A PIONEER.

**T**HE man who ought to be remembered with the Grand Canyon of the Colorado is not a scientist, nor a painter, nor a poet. He is only an old pioneer who has summered and wintered with the Grand Canyon for twelve years. His name is John Hance. Some people call him Old John Hance, and he calls himself, at times, old Captain John Hance, and I believe he has a military record to back up the title. It doesn't matter, he holds a better one.

Your friends who have been to the canyon will say: "See the canyon, of course, but don't fail to see old John Hance," and I hereby celebrate, also, the personality of the man who made the canyon his home when it was practically an unexplored wonder.

I do not care to go behind the old man's own statement of the case, for that statement is so good it ought to be final, even if it isn't.

In the summer of 1869, Major Powell and party made the only descent by boat that had ever been known in this stupendous gorge. But what of that? In 1883, John Hance came upon the canyon—in a prospecting tour; admired it, loved it, and has lived with it ever since and expects to die beside it and be buried in it—God willing and man aiding.

It is a pleasure to have visited the Grand Canyon, and an honor to have explored it, but it is a glory to have loved it and lived beside it to the exclusion of neighbors, friends, wife and children. It has claimed all there is of John Hance. His loyalty is unquestioned. He talks of it, dreams of it, his gestures delineate it, his talk conforms to it.

## HIS SUMMER HOME.

In summer he lives on the rim, and the door of his little cabin commands one of the finest views of the most tremendous gulf in the world—the point where the Colorado River breaks through the Buckskin Plateau. At sunset, when his evening snack is eaten, John can pull a stool to the very edge of the awful chasm and there sit and smoke his pipe and watch the splendid colors shift and glow, and cool, and darken in the deeps, and



Photo, W. H. Knap.

COLORADO RIVER, FOOT OF BRIGHT ANGEL TRAIL.

flare behind the sculptured peaks like banners, as if some hidden flaming fire were trying to outdo the glory of the sky. He chose this site because he loved it. He had a cabin at first which was more sheltered by the pines, but he couldn't see his canyon, so he moved.

### WINTER QUARTERS.

Here he lives, surrounded by his mules until October comes—and then, when the cold winds threaten and snow begins to slide along the high plateau, John mounts his favorite mule, and driving all his cattle before him, descends 6,000 feet and finds perpetual summer. On the sage-green bushes, 1,000 feet above the river, his cattle feed. In his tent among the mesquite trees, the old pioneer lives, while far above him the harsh winds howl and the whirling snow falls foot by foot, blocking every road and piling high above his cabin.

At his door the sullen, tawny-red flood roars, laden with millions of tons of soil, crashing its mighty boulders together, gnawing upon the cliffs, sinking itself in the solid rock like a file into an anvil. In the daytime as John works at his forge, or rides after his cattle, the river's voice grows dim and small, but at night when, with his pipe in hand, he sits at the door of his tent and the darkness rises from the flood like an exhalation, then the river awakes, its roar grows louder, angrier, more tumultuous. It comes at last to dominate the whole valley. It then appears the potentiality it really is—the power which has hewn out this incomprehensible chasm between the mountainous cliffs.

The tourist sees the canyon from the rim or during one day on the trail, but John sees it 365 days in the year, and each day it is different. He sees it when the gray clouds roof it in like some prodigious dim temple. He sees it when the tall peaks are white as marble and the upper canyons are filled with ice; when the streams around him are quickened by melting snow and the grass grows green again through falling rain. He sees it in a thousand varied, harmonious effects of light and shade—in moonlight, in starlight, in dawnlight.

### AN EXPLORER.

In the winter days when there is nothing else to do (and there could be nothing better to do), John goes exploring the mysterious presence. Driving his burro, laden with a camping outfit, he strikes out along the river. One winter he explores up, the next winter down. In very truth he knows the canyon for a hundred miles, knows it and loves it—does not fear it. He knows that in the midst of these overawing immensities there are grassy nooks where the ferns grow and water falls with merry gurgle. The canyon has a thousand moods when one comes to live with it. John has seen them all.

He knows, too, the cliff-dwellers' houses, mere swallow nests in the unscalable cliffs, and he muses upon the antiquity of man, and most of all upon the antiquity of this river bed. He speaks often of the mighty dikes of granite through which the river has chiseled its way, and asks: "Who can tell how long it has taken to drill through rock like that? Long enough to make men of no account on this earth—surely."

He has come, naturally, to feel a sort of proprietorship here. He recognized the grim resolution of Powell in going through it when every bend in its river was unknown and threatening—but he knows that it can be traversed to-day without much danger.

Powell and Moran had the cultivated faculty of letting the world know of their discoveries. Old John has only the power of his tongue, which is considerable, but does not reach the great world.

### A STORY TELLER.

There are those who laugh at John Hance and see nothing in him. Others acknowledge him to be a powerful and astonishing fictionist. Consciously he is a teller of whopping lies. Unconsciously he is one of the most dramatic and picturesque natural raconteurs I have ever met. His experiences as a soldier, as a guide on the plains, as a prospector, as a hunter, furnish him with an enormous fund of actual adventure, which he tells with the power of actor and fictionist combined—provided he does not become self-conscious. Unless carefully handled his wit is labored and artificial.

He is a Tennessean, and his soft, drawling voice and accented auxiliary verbs add quaintness and distinction to his stories. His gift for telling phrases is as great in its way as that of Whitcomb Riley. His profanity is never commonplace. It blazes out like some unusual firework and illumines his story for yards around. It is not profanity; it is dramatic fervor. He has his weaknesses like the rest of us, and they are apparent to any casual comer.

But the man has, also, something elemental about him—something which makes his frame invincible to cold and hunger. He would be lost, and helpless, and ill at ease in Chicago or New York, but here he is native. To think of him jogging down the trail in the autumn, a minute speck of living matter, to spend five months alone in that stupendous abyss, is to come to the man's real quality. And he does this, be it understood, not as an act of bravado, not as a scientist to explore for a winter, but to live there as a matter of choice.

He has his stories of vast gold mines, it is true, but nobody believes them. If they were there—what matter? It is a government park reservation. He has his theory that all the washings of gold from the San Juan country for a million years, are lodged along this river bed, and if it could be turned aside at certain places there would be tons of gold lying in the pot holes in the granite, but there it lies and there it must forever remain beneath that enormous ferocious flood.

He does not fear to be out of the world, for he has beside him the one incontestable wonder of God's earth. If he waits long enough, all the world will come to him. All the poets and scientists and geologists—all the people really worth knowing will come to see old John and his canyon, and here say deliberately they are both worth while.



AT BASS' CAMP, HEAD OF MYSTIC SPRING TRAIL.

## COMMENTS.

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**W**HAT has been said about the Grand Canyon would fill many books. Many thousand tourists have visited the scene. Each has tried, by word of mouth, by pen, or by picture, to put individual impressions in some lasting form. Out of a large file of newspaper clippings and letters, the following have been selected as fairly typical of how the canyon appears to tourists, journalists, business men, educators and others. Only brief extracts are given:

I have seen all the wonders of the new world. The Grand Canyon is the grandest of them all.—C. P. BOND, of Boston Journal.

I think it is very, very deep and grand, and that it must have taken a very long time to make it. I would like to stay here forever, it is so beautiful.—CAROLINE HADLEY, (aged 9 years).

Imagine, if you can, all the armies of all the nations of the earth, marching in solid columns from opposite sides of this appalling gorge to meet each other in battle array, unconscious of the existence of this spot until too late to save themselves from being swallowed up in its abysmal depths; imagine all these vast bodies of men, with all the guns, all the horses—infantry, cavalry, artillery, sappers, miners and pontoniers—all the transportation trains and all the impedimenta of an army, together with all the buildings of all the cities of the world; imagine all this vast aggregation of men and material thrown into this immeasurable abyss, and the Grand Canyon would still remain unfilled for its entire length, and the Colorado River would continue to flow unintercepted on its resistless course to the sea. In its measureless, cruel, insatiable maw all would be swallowed up.—GEN. HARRISON GRAY OTIS, Los Angeles Times.

When Nature cuts a gash in the rind of this old sphere 300 miles long, with a gap of twelve to eighteen miles and depths of 6,500 feet, dumps it full of mountains and chasms and sets a mighty river or two wandering through its labyrinths in search of the sea, it is worthy consideration. Such in brief is the Grand Canyon of Arizona, whose imperial title has been filched to glorify many a smaller chasm in other parts of the world.—FRED. BENZIGER, Chicago Record-Herald.

As I looked I thought of Vesuvius, on whose trembling brink I had stood—but in the comparison Vesuvius is a mere lump; of the icebergs I had seen in Alaska, born from the glacier's icy womb—but in the comparison they were toboggan slides; of Niagara—but thirty Niagaras could be placed, each on each, against these tremendous walls, and the great cataract itself could be located in one of the canyon's side pockets, and its voice at this far height would be but a murmur; of the Yosemite—but that great marvel could be placed in one of a hundred subordinate, lateral canyons and its presence unsuspected; of the Garden of the Gods—but that is a puppet show to this great spectacle; of the Yellowstone—a mere pocket edition, which, were it here, only a skilled guide could find it.—REV. J. W. HANSON, in Conkey's Home Journal.

LOOKING DOWN WEST BRANCH OF SHINUMO FROM KAIBAB PLATEAU.



photo. Fortnum & Fendall



## COMMENTS.

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I have seen the Grand Canyon! No painter can paint it—no photographer can photograph it. To me its awfulness is lost in its marvelous beauty. I shall never forget the first impression I got from Sublime Point one afternoon in November. The sky was without a cloud and the atmosphere was indescribably clear; the whole scene was phantom-like, unreal, almost unearthly.—G. H. BUEK, Vice-President American Lithographic Company.

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The vision of the canyon at sunset is one of the marvels. All its colors are intensified and the reds and yellows burn like coals. When the low sun gilds the red sandstone masses, oceans of rose-flame sweep up the walls, more and more brilliant as they climb, until the topmost thousand feet of the farther rim blaze with the fire of hyacinth, ruby and garnet. All the sky is gorgeous with pink light, yet the pinnacles of rock that catch the last gleams are more brilliant than the clouds. The splendor rises and fades and is caught by the vapors overhead. After the sky colors, too, have faded, you are about to turn away, lingering, regretting, when—again, a wonder; for new colors, deep, tender, solemn, flow up along the painted walls, as night brims out of the deep. The bottom grows vague and misty, but each Walhalla is steeped in purple as soft as the bloom of grapes. When day is wholly gone and the canyon has become to the eye a mere feeling or impression of depth and space, walk out on some lonely point. The slopes, thirteen miles away, are visible as gray walls, distinct from the black cliffs, and on the hither side the trees are clear against the snow. No night is absolute in blackness, but as we look it seems as though the canyon was lighted from within. It is an abyss of shadow and mystery. There is a sadness in the canyon, as in all great things of nature, that removes it from human experience. We have seen the utmost of the world's sublimity and life is fuller from that hour.—C. M. SKINNER, in *Brooklyn Eagle*.

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It is the only scenery on the globe that does not disappoint. Suddenly, without any premonition, the earth yawns beneath you! You stand upon the brink of the bottomless pit. Terrible! An indescribable emotion seizes you. You wish to topple forward, to fling yourself into that awful chaotic chasm. You recoil, step back and lift your eyes, and, lo, the gates of paradise seem swinging before you, and through them you see the walls and ramparts and golden streets of a city not made with hands.

And that is just what the Grand Canyon is—a combination of regions infernal and celestial. I am not going to try to describe it, for before its superhuman majesty, its splendor, its loveliness, words become as sounding brass and as a tinkling cymbal. I wish only to say that as I stood there and looked at it first, flooded with the soft golden and violet lights of sunset, I longed for a trumpet to send forth a clarion call over this vast country and to cry: "Stop, stop, Americans! Do not go abroad! Look at your own country first. Come here and see what God has wrought."—EDITH SESSIONS TUPPER.

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Even before entering the hotel I had seen what would alone repay a journey from Boston to Bright Angel Trail. The marvelous sea of color was like a revelation of the new Jerusalem. The colossal canyon itself could not hold the people who would throng here, were it adequately known.—LILIAN WHITING, author of "*The World Beautiful*."

## COMMENTS.

The Creator has several autographs—Yosemite, the Yellowstone, the Grand Canyon of Arizona and others. The Yosemite might be called the Valhalla, the temple of the gods; the Yellowstone might be called their playground, their sublime wonderland; the Grand Canyon, bursting upon the vision out of its remote solitude in the Arizona desert, might be called their grave. Horror! Tragedy! Silence! Death! Chaos! There is the awful canyon in five words. Standing on the rim of this titan of chasms, studying its awful and bewildering architecture, its terrifying abysses, plunging precipice into precipice, spectral, elusive, overwhelming the faculties, and over all the unbroken silence of the underworld, save for the weeping of the pines at dusk, and the hoarse, almost indistinguishable, groaning of the giant river boring unseen in its remotest abyss—it seemed to me as if it were the burying ground of the universe. It is the delirium of Nature. It seems both alive and dead. The mind at first stands aghast. There is a sense of terror that cannot be put into words. There is the silence of eternity. There is no yardstick, except the units be in abysmal vortexes and tangled mountain forms. There is nothing to compare it with or measure it by, but infinity.—REV. C. B. SPENCER, in *Rocky Mountain Advocate*, Denver.

I have stood on mountain tops and looked across distances greater than any between the rims of this abyss, but none of these gave me this thrilling sense of grandeur appalling and unearthly, of supernal and impossible beauty. And the utter restfulness of the place makes it eternal to the sense. Here is no motion except the motion of light and shadow, no life but the life of the spirit. This must be the place of departed souls, for here all things endure.

And the return to the rim is an ascent into heaven—one cannot escape the illusion. The supernal vision returns to me—I think I shall always see it when I close my eyes, and long for it when I open them. Surely it would be a shame to enter paradise without beholding the uttermost splendor of earth. So let me urge this place of peace and glory upon all who dwell in cities and burden their minds with things of little importance.—MISS HARRIET MONROE, in *Chicago Record-Herald*.

Nowhere in all the world can the geologist obtain in a single glance such an impressive lesson in geology.—RALPH S. TARR, Professor of Physical Geography, Cornell University.



A TRIP ALONG THE RIM.

## COMMENTS.

The Grand Canyon. What is it? I do not know; you do not know; God only knows. When I stood for more than an hour on Sunset Rock and the sun went down below the horizon, and I viewed the various changes of light and shade, I immediately thought of the next change, and the inimitable words, "Nearer my God, to Thee," came forcibly to mind. I have seen many wonders in the world, both natural and artificial—St. Peter's of Rome, Mont Blanc, the Matterhorn, the magnificent scenery of the Rhine, the beauties of Ireland (not forgetting the Lakes of Killarney), the lovely gardens of England, the roaring Atlantic, Niagara Falls, etc., but all sink into insignificance compared with the wonderful beauty of the Grand Canyon. If you have any desire to know the Grand Canyon, rely neither on poet nor writer, but see it with your own eyes. None other can transmit its wonders.—GEO. B. REEVE, Second Vice-President and General Manager, Grand Trunk Railway System.

Behold the realm where Colorado flows!  
Here countless centuries have wrought their will  
In forms majestic with impellent skill;  
Cathedrals reared their naves from this repose,  
With pomp of giant pinnacle where glows  
The sunset; and a stream, that scarce might fill  
An emperor's chalice, carved its way until  
The sculptures of a million years uprose.  
And from the imbedded silence of this stone—  
Strange hieroglyphic tomb of time's decay—  
The river's voice forever stronger grown,  
A sunlit spirit in its shadowing clay,  
Sings to the soul, that makes impatient moan,  
And speeds it blithely on unto the open day.

—LOUISE MORGAN SILL, in Harper's Weekly, May 4, 1901..

Words are inadequate to describe the canyon. Neither the orator nor the poet can do it justice. It must be seen to convey the slightest idea of its grandeur and wonder. It is well worth a trip from New York. I have been amply repaid for the journey.—JOHN A. McCALL, President New York Life Insurance Company, New York.



IN TIME OF FLOOD.

## COMMENTS.

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From the ragged upper edge of a western cloud bank—grim battlement of the sun—hang an arras of many league-long Indian blankets. Drive under them, from beyond, a tempest that shall rush, mad with fear, from the awful Commander's presence.

The high escutcheoned curtain is hurled in a thousand rugged billows; tossed into shifting peaks and weird convolutions; rolled and ribboned and rent, while the fierce barbaric colors are massed and parted; cities seem builded and razed, seas stormed, and forests heaving under the flying canopy; and the trailing, splendid shreds cover the world from the far horizon to your very feet.

You have hung a wondrous tapestry; in the midst of its upheaval let it be fixed—changed to flaming stone, backed and bulwarked to the mighty ribs of earth with the unyielding fabric of mountains. Rugged and broken and strange, the wonder appalls you. Cast over it the clear, light, purple dust of distance and the gray gossamer of ages. Very faintly, you see the Grand Canyon in your fancy.—THOMAS WOOD STEVENS, in Leslie's Weekly.

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The Grand Canyon is one of the few great sights of the world that comes up to its reputation. I have crossed the grandest passes of the Alps and Appenines, of the Lebanons and Balkans, but nothing there seen stands out so vehemently grand as my memory of the Grand Canyon. This glorious handiwork of the Creator speaks to the soul as a printed book cannot.—REV. W. H. WITHROW, Editor Methodist Magazine, Toronto, Ont.

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We don't realize what we have in this country in the way of scenery. Out there in Arizona is a scenic wonder, the like of which, world-wide travelers say is not to be found anywhere on earth. When the great chasm opened before me I caught my breath and murmured: "My God, there it is!" Nearly everyone who visits the canyon for the first time gives involuntary expression to some such phrase. It draws upon the emotions as no sermon, no oration, could possibly do, and men of rigid exterior and neglectful religious habits have been known to bend in reverence before this sublime mystery. It was twelve miles to the opposite brink where we looked and over a mile to the bottom, along which the great Colorado, resembling a tiny yellow ribbon as it zigzagged on its fretful course, has flowed and roared for ages—a body of water ten times the size of the Nile, and with power enough, could it be utilized, to feed numberless manufactories.—FRANK CAUGHEY, Vice-President Detroit Board of Trade, in Detroit Free Press.

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For a whole year I lived either in the Grand Canyon or in the pine forest which covers the mesa and extends to the mighty chasm's rim. I stayed down among the granite chambers, where I could hear the grinding boulders as they swept along, impelled by the mad waters of the Colorado. Again, I lived in a little green side valley, half way between the river and the top, where a stream of clear water burst from the canyon side and formed Bright Angel creek; and lastly, on the very brink of the canyon, where every detail of the amphitheater—cliff, mural front, isolated peak, silvery river—was a feast for the eyes; and now, long years after, there comes to me remembrance of the first impression of overpowering sublimity and awe, which dull city life and daily toil have not been able to dispel.—COLIN TIMMONS, in Denver News.

## COMMENTS.

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There are rivers in Europe that delight tourists and are world-renowned—the beautiful blue Danube, the castle-bordered Rhine and the Rhone, born in a glacier high up in the mountains of Switzerland—but here we have a river of the new world which, having its origin in the deep solitudes of the Rockies, carves out a weirdly eventful history for itself. It passes through mighty gorges, tumbles in cataracts, falls in rapids, is fed by the innumerable mountain springs and rivulets and rivers, and rushes along to its goal, the ocean. Leaving the Grand Canyon it continues its winding course away from the habitations of man, through the burning plains of a great arid desert, losing its identity forever in the great Gulf of California.—ARTHUR K. PECK.

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Remoteness can no longer excuse the transcontinental traveler for failing to see this, America's grandest spectacle, for of the three great wonders of the western world, the Yellowstone, the Yosemite and the Grand Canyon, the latter is now the most easily reached. \* \* \* Let no one imagine, as he first looks out over the chaos of cliffs, terraces, domes, obelisks and buttes of fantastic shape, that he has really seen the canyon. He has merely read the first line in the preface of a book, which never once repeats itself.—H. G. PEABODY, in "Glimpses of the Grand Canyon of Arizona."

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The most imposing panorama in Norway, according to the popular judgment, is the "Raftsund," in the Lofoten Islands, which was selected by the Norwegian government as presenting the highest type of national scenery for exhibition in the form of a cyclorama at the Paris Exposition. Emperor William of Germany, who comes into the fjords of Norway nearly every year in his yacht, has erected a cabin on the top of one of the mountains, from which he can obtain a bird's-eye view of a large area, and it is declared that from his eyrie may be witnessed the greatest variety of mountain scenery in the world. The Grand Canyon of the Colorado could swallow up all the fjords in the Lofoten Islands and conceal them from human view; the brilliant colors of its walls are not seen in Norway. Here we have only the dull, dark, gray rock, with its cushions of velvet moss and scrub pine, the intense glittering white of newly fallen snow, the "baby blue" tints of the glaciers and the dark sullen green of the deep waters.—WM. E. CURTIS, in Chicago Record-Herald.



JOHN HANCE TELLS A STORY.



THE START FROM GRAND VIEW HOTEL.

# INFORMATION FOR TOURISTS.

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## PRELIMINARY.



HERE is only one way by which to directly reach the Grand Canyon of Arizona and that is via the Santa Fe (The Atchison, Topeka & Santa Fe Railway System.)

There are three ways of reaching the Canyon from the Santa Fe—rail from Williams, private conveyance from Flagstaff and Peach Springs.

The route from Flagstaff is not available in winter. The Peach Springs route is open in winter, but now little used. The bulk of the travel is via Williams, sixty-five miles north to Bright Angel—open all the year.

## THREE GATEWAYS.

There are but three points from which an easy descent may be made of the south wall of the granite gorge of the Grand Canyon—

1. At Grand View, down Berry's (Grand View) or Hance's (Red Canyon) trails.
2. At Bright Angel, down Bright Angel Trail.
3. At Bass' Camp, down Mystic Spring Trail.

While the canyon may be reached over trails at other places outside of the district named (such as Lee's Ferry Trail, by wagon from Winslow; Moki Indian Trail, by way of Little Colorado Canyon; and Diamond Creek road to Colorado River from Peach Springs station), most tourists prefer the Bright Angel, Grand View and Bass' Camp routes, because of the superior facilities and views there offered. The Peach Springs route is the only other one now used by the public to any extent.

It is near Grand View that Marble Canyon ends and the Grand Canyon proper begins. Northward, a few miles away, is the mouth of the Little Colorado Canyon. Here the granite gorge is first seen.

Bright Angel is approximately in the center, and Bass' Camp at the western end of the granite gorge. By wagon road it is eighteen miles from Bright Angel east to Grand View, and twenty-three miles west to Bass' Camp.

In a nutshell, the Grand Canyon at Grand View is accounted most sublime—a scene of wide outlooks and brilliant hues; at Bright Angel, deepest and most impressive—a scene that awakens the profoundest emotions; at Bass' Camp, the most varied—a scene of striking contrasts in form and color.

Each locality has its special charm. All three should be visited, if time permits, as only by long observation can one gain even a superficial knowledge of what the Grand Canyon is. To know it intimately requires a longer stay and more careful study.

## THE RIDE FROM WILLIAMS.

Because of recent improvements in service the Grand Canyon of Arizona may now be visited, either in summer or winter, with reasonable comfort and without any hardship. No one need be deterred by fear of inclement weather or a tedious stage ride. The trip is entirely feasible for the average traveler every day in the year.

Leaving the Santa Fe transcontinental train at Williams, Arizona, passengers change

## INFORMATION FOR TOURISTS.

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in same depot to a local train of the Grand Canyon Railway, which leaves Williams daily, and arrives at destination after a three hours' run.

Williams is a busy town of 1,500 inhabitants, 378 miles west of Albuquerque, on the Santa Fe. Here are located large sawmills, smelters, numerous well-stocked stores and railroad division buildings. Prior to the disastrous fire in July, 1901, there were several excellent hotels. The one not destroyed affords good accommodations, and it will not be long before other facilities are provided.

The railroad track to the canyon is remarkably smooth for a new line. It is built across a slightly rolling mesa, in places thickly wooded, in others open. The snow-covered San Francisco Peaks are on the eastern horizon. Kendricks, Sitgreaves and Williams mountains are also visible. Red Butte, thirty miles distant, is a prominent local landmark. Before the terminus is reached the train climbs a long, high ridge and enters Coconino Forest, which resembles a natural park. The route here is amid fragrant pines, over low hills and along occasional gulches and "washes." Taken under the favorable conditions which generally prevail at this high altitude, the journey is a novelty and a delight.

### AT DESTINATION.

The hotel at head of Bright Angel Trail is reached late in the evening. The tourist then finds himself on the verge of a high precipice, from which is obtained by moonlight a magnificent view of the opposite wall and of the intervening crags, towers and slopes. The suddenness, the surprise, the revelation come as a fitting climax to a unique trip. After nightfall the air becomes cold, for here you are 7,000 feet above the sea; yet the absence of humidity, peculiar to these high altitudes,



BRIGHT ANGEL HOTEL FROM EAST.

Photo, W. H. Knap.

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makes the chill less penetrating than on lower levels. By day, in the sunshine, there is usually a genial warmth—then overcoats, gloves and wraps are laid aside.

### BRIGHT ANGEL HOTEL.

The Bright Angel Hotel is managed by Mr. M. Buggeln, who also controls the stage line, trail stock, guides, etc. The hotel comprises a combination log and frame structure of eight rooms, with a neat frame annex of six rooms, and (for summer use) several rows of tents, all clustered on the rim and surrounded by pines and spruces. Each room in the annex has two beds, a stove, dressing table and Navajo rugs. In the log-cabin part of the main edifice are two large rooms—one is used for reception purposes, being warmed by means of an old-fashioned fireplace and tastefully carpeted with Indian rugs, also furnished with capacious rocking chairs and a piano; the other of these two rooms is for emergency uses. Another building has been erected recently which contains twenty sleeping rooms and furnishes excellent accommodations for tourists.

Good meals are prepared by an expert cook and served in a pleasant dining room. In a word—the hotel facilities are good—far better than one might expect to find for the reasonable rate charged. There is no “roughing it”—everything is home-like and comfortable. One must not, however, expect all the city luxuries. A telephone line directly connects the hotel with the outer world at Williams.

NOTE—A fine modern hotel of fifty rooms, with cottage annexes, will be built in this vicinity during the coming year and managed by Mr. Fred Harvey. It will provide all the latest conveniences.

### LENGTH OF STAY.

While one ought to remain at least a week, a stop-over of three days from the transcontinental trip will allow practically two days at the canyon. One full day should be devoted to an excursion down Bright Angel Trail and the other to walks and drives along the rim. The views from Rowe's, O'Neill's and other points are always satisfactory. There is a sufficient variety of outlook from the plateau level to fully occupy the time. Another day on the rim—making a four-days' stop-over in all—will enable visitors to get more satisfactory views of this stupendous wonder.



Photo, H. G. Maratta. COACH AT BRIGHT ANGEL HOTEL.



Photo, H. G. Maratta. INTERIOR BRIGHT ANGEL HOTEL.





LOOKING ACROSS FROM KIM TRAIL, GRAND VIEW.

Copyright, 1909, by H. G. Proctor.

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### DOWN BRIGHT ANGEL TRAIL.

The trail here is perfectly safe and is generally open the year round. In mid-winter it is liable to be closed for a few days at the top by snow, but such blockade is only temporary. It reaches from the hotel four miles to the top of the granite wall immediately overlooking the Colorado River. At this point the river is 1,200 feet below, while the hotel on the rim is 4,300 feet above. The trip is commonly made on horseback, accompanied by a guide; charges for trail stock and services of guide are moderate. A strong person, accustomed to mountain climbing, can make the round trip on foot in one day, by starting early enough; but the average traveler will soon discover that a horse is a necessity, especially for the upward climb.

The famous guide, John Hance, is now located at Bright Angel.

Eight hours are required for going down and coming back, allowing two hours for lunch, rest and sight-seeing. Those wishing to reach the river leave the main trail at Indian Garden Spring and follow the downward course of Willow Creek. Owing to the abrupt descent from this point, part of the side trail must be traversed on foot. Provision is made for those wishing to camp out at night on the river's edge.

### WHAT TO BRING.

If much tramping is done stout, thick shoes should be provided. Ladies will find that short walking skirts are a convenience; divided skirts are preferable, but not essential, for the horseback journey down the zigzag trail. Traveling caps and (in summer) broad-brimmed straw hats are useful toilet adjuncts. Otherwise ordinary clothing will suffice. A good field glass materially assists in getting a satisfactory view of the farthest cliffs. A camera of ordinary size should be brought along, although it can only record little details of the canyon—one should not expect to photograph the entire panorama.

### COST OF TRIP.

The round-trip ticket rate, Williams to Grand Canyon and return, is only \$6.50. Adding \$6.00 for two days' stay at Canyon hotel, \$2.00 for part of a day at hotel in Williams, \$2.50 for probable proportion of cost of guide, \$3.00 for trail stock, and the total necessary expense of the three days' stop-over is about \$20.00 for one person; each additional day only adds \$3.00 to the cost for hotel.

Stop-overs will be granted at Williams on railroad and Pullman tickets if advance application is made to train and Pullman conductors. Baggage may be stored in the station at Williams free of charge by arrangement with ticket agent. Pullman sleeper winter service has been established between Grand Canyon and Los Angeles.

### GRAND VIEW.

Grand View (previously mentioned) may be reached in summer by private conveyance from Flagstaff, a distance of seventy-five miles; or at any time of the year by stage from Bright Angel, sixteen miles along the rim. The rate for round trip, Bright Angel to Grand View, is \$2.50 to \$5.00 each person, according to size of party. While Flagstaff is an interesting place to visit—with its near-by cliff and cave dwellings and San Francisco Peaks—and the trip thence to the Grand Canyon is a novel one, distance and time are such that most travelers prefer to go in by railroad from Williams.

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Grand View Hotel is a large, rustic structure, built near the head of Berry's Trail and about three miles from Hance's Trail, in the midst of tall pines and overlooking the mighty bend of the Colorado. This is the point to which visitors were conducted in the days of the old stage line from Flagstaff. It is noted for its wide views of the Coconino Forest and Painted Desert, as well as for the beautiful forms and color of the canyon itself. A favorite trip here is to go down one trail and up the other. The hotel accommodations are quite good—capacity, forty guests; rate, \$3.00 per day.

### BASS' CAMP.

At the western end of the granite gorge is Mystic Spring Trail, an easy route down to the Colorado River and up the other side to Dutton's Point and Powell's Plateau. The magnificent panorama eastward from Havasupai Point takes in fifty miles of the canyon, while westward is the unique table-like formation which characterizes the lower reaches of the river.

Present accommodations at Bass' Camp, near head of this trail, are rather meager, consisting of a small cabin and a few tents; meals are served in camping-out style. The views here, from both rims, are pronounced by noted artists and explorers to be unequaled.

Bass' Camp is reached by team from Bright Angel, twenty-six miles. Advance arrangements must be made for transportation.

The trip to Cataract Canyon is elsewhere described.

### PEACH SPRINGS ROUTE.

The trip in winter from Peach Springs station down to the Colorado River, through Diamond Creek Canyon, is most enjoyable. Owing to the low altitude here (4,780 feet at Peach Springs and approximately 2,000 feet at the river) the air is usually balmy from November to April; in summer the heat is somewhat of a drawback.

A journey of but twelve miles leads you through a miniature Grand Canyon with scenery increasingly sublime. On either side are abrupt walls and wonderfully suggestive formations—castles, domes, minarets. On your left, glancing backward, is an exact reproduction of Westminster Abbey.

This comparatively easy jaunt brings you by team to the very brink of the swift-rolling Colorado, whereas by the other Grand Canyon gateways you are landed on the rim and must go down thousands of feet by a steep trail. The outlook here is restricted to the river itself and the great walls rising precipitously from its banks—a scene well worth while, but not so impressive as the wide sweep of the canyon visible from the rim.

Following Diamond Creek to its source you may walk along the bed of the stream between walls thousands of feet high and glistening in the white sunlight as if varnished. The upper part of Diamond Creek is a veritable terrace of fern bowers, luxuriant vegetation, crystal cascades and sequestered meadow parks.

### FLAGSTAFF AND VICINITY.

In his "Climbing Sunset Mountain" Professor Beecher has mentioned one of the many attractions for tourists in the vicinity of Flagstaff.

The town itself is an interesting place, prettily situated in the heart of the San Francisco uplift and surrounded by a pine forest.

Its hotels, business houses, lumber mills and residences denote thrift. On a neigh-

## INFORMATION FOR TOURISTS.

boring hill is the Lowell Observatory, noted for its many contributions to astronomical science.

Eight miles southeast from Flagstaff—reached by a pleasant drive along a level road through tall pines—is Walnut Canyon, a rent in the earth several hundred feet deep and three miles long, with steep terraced walls of limestone. Along the shelving terraces, under beetling projections of the strata, are scores of quaint cliff dwellings, the most famous group of its kind in this region. The larger abodes are divided into several compartments by cemented walls, many parts of which are still intact. It is believed that these cliff dwellers were of the same stock as the Pueblo Indians of to-day and that they lived here about eight hundred years ago.

Nine miles from Flagstaff and only half a mile from the old stage road to the Grand Canyon, upon the summit of an extinct crater, the remarkable ruins of the cave-dwellers may be seen.

The magnificent San Francisco Peaks, visible from every part of the country within a radius of a hundred miles, lie just north of Flagstaff. There are three peaks which form one mountain. From Flagstaff a road has been constructed up Humphrey's Peak, whose summit is 12,750 feet above sea level. It is a good mountain road, and the entire distance from Flagstaff is only about ten miles. The trip to the summit and back is easily made in one day.

The summit of Humphrey's Peak affords a noble view, the panorama including the north wall of the Grand Canyon, the Painted Desert, the Moki villages, the Superstition Mountains near Phoenix, many lakes, and far glimpses over a wide circle.



Photo, C. Osborn.

END OF TRAIL, NORTH SLOPE OF AGASSIZ PEAK, ALTITUDE 12,600 FEET.



LOOKING EAST FROM GRAND SCENIC DIVIDE.

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MAP OF GRAND CANYON OF ARIZONA.











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